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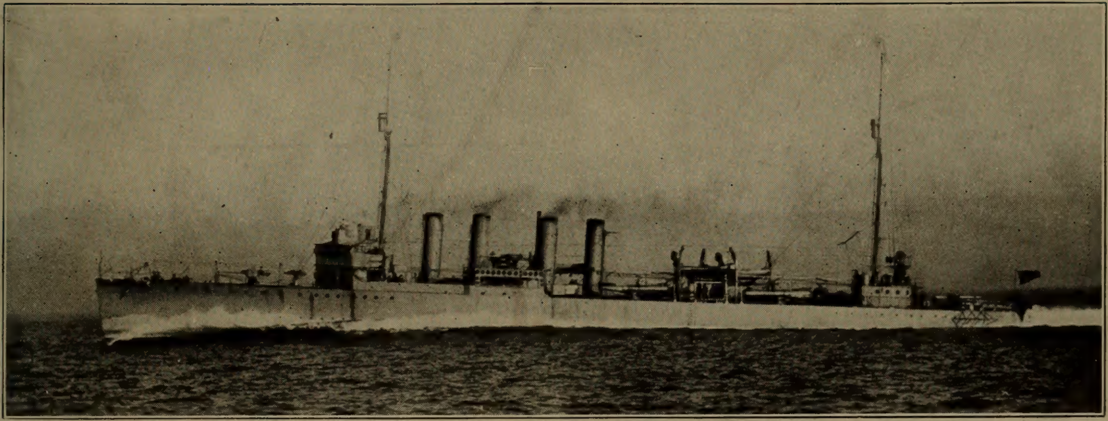
The National Magazine of Shipping



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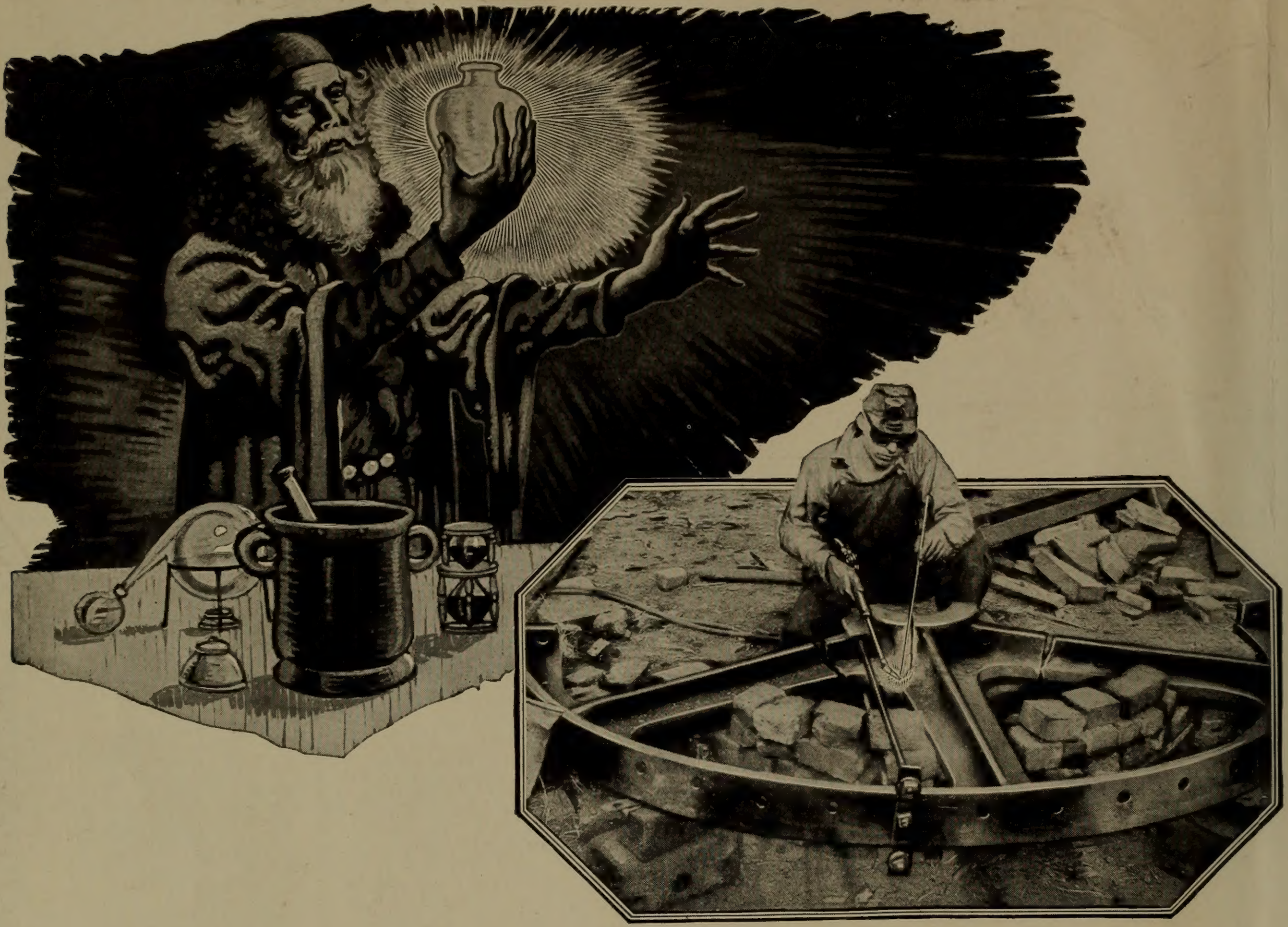

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# Pacific Marine Review

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## “From Pontoon *to* Superdreadnought”

During the twenty-odd years of its existence the New York Shipbuilding Corporation has not only turned out many repetitions and variations of the same type of vessel, but has built vessels of almost every known marine type—literally “from pontoon to superdreadnought.”

From the accomplishments of the past it is able to bring to new ship construction a wealth of experience gained in both quantity production and specialized output. The New York Ship yard is a specialist not merely in one type of vessel but in many—it might be said in all.

Passenger liners, tankers, colliers, general cargo carriers, destroyers, battleships, cruisers, mine-planters; carfloats, ferryboats, tugboats, dredges; each type, each different size or class, reflects the diversified skill, the completeness of shop and yard facilities of this great shipyard.

---

**NEW YORK SHIPBUILDING Corporation**

# Some Crumbs of Comfort

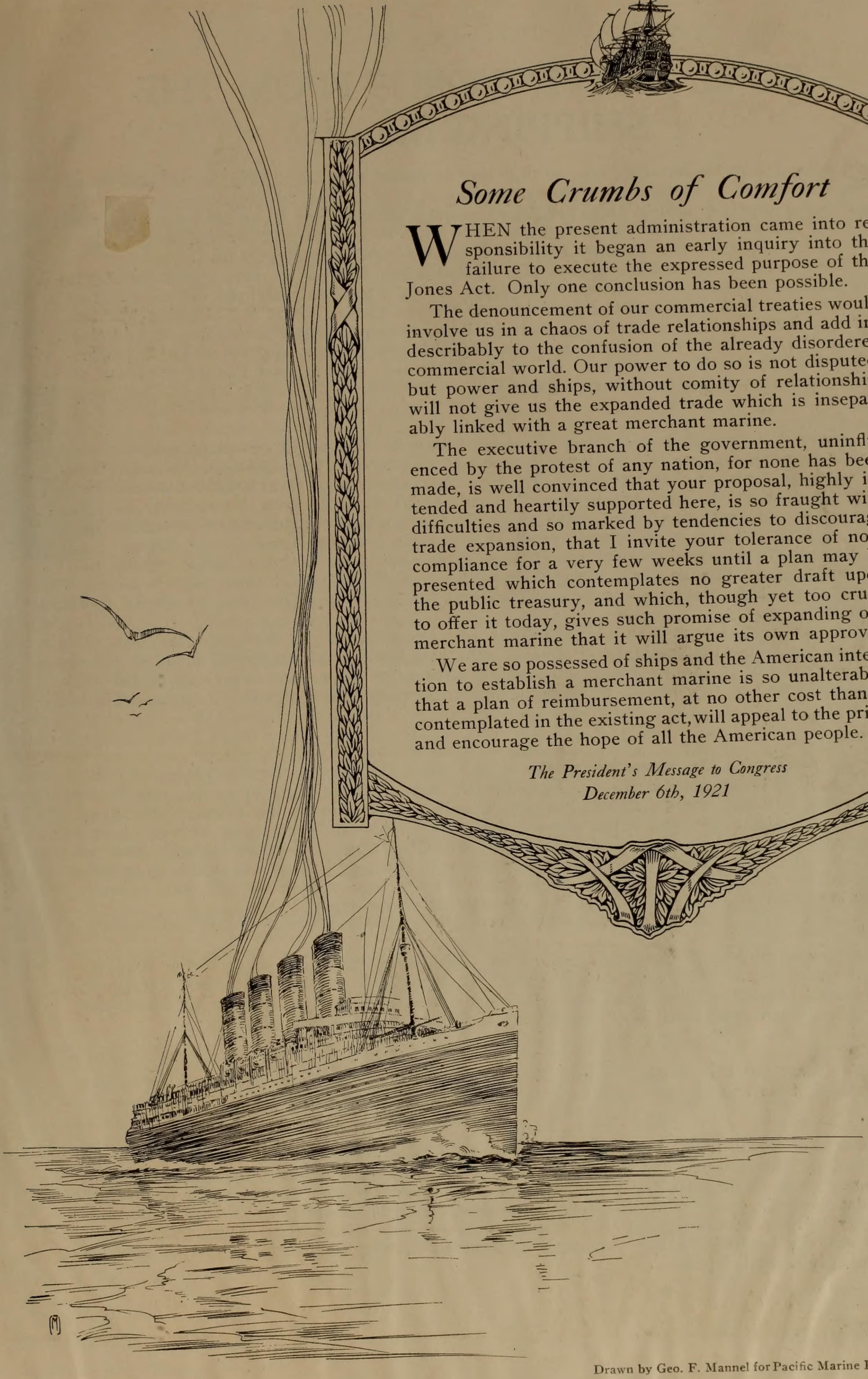
WHEN the present administration came into responsibility it began an early inquiry into the failure to execute the expressed purpose of the Jones Act. Only one conclusion has been possible.

The denouncement of our commercial treaties would involve us in a chaos of trade relationships and add indescribably to the confusion of the already disordered commercial world. Our power to do so is not disputed, but power and ships, without comity of relationship, will not give us the expanded trade which is inseparably linked with a great merchant marine.

The executive branch of the government, uninfluenced by the protest of any nation, for none has been made, is well convinced that your proposal, highly intended and heartily supported here, is so fraught with difficulties and so marked by tendencies to discourage trade expansion, that I invite your tolerance of noncompliance for a very few weeks until a plan may be presented which contemplates no greater draft upon the public treasury, and which, though yet too crude to offer it today, gives such promise of expanding our merchant marine that it will argue its own approval.

We are so possessed of ships and the American intention to establish a merchant marine is so unalterable, that a plan of reimbursement, at no other cost than is contemplated in the existing act, will appeal to the pride and encourage the hope of all the American people.

*The President's Message to Congress*
*December 6th, 1921*



Drawn by Geo. F. Mannel for Pacific Marine Review

# SOME BRAVE WORDS FROM THE SHIPPING BOARD

SAYS Albert Lasker, chairman of the United States Shipping Board, in an address at Milwaukee December 13: The proponents of an American merchant marine must rest their case far beyond the grounds of national defense, which, to the layman, at best is academic and far off, though to those who, with statesmanship vision, realize all the potential possibilities of the future, it is a matter of deepest concern.

The claims for an American merchant marine must rest on its economic necessity to the American people as a whole. The claims for an American merchant marine can rest on the proof that John Smith, who knows and cares nothing about the shipping business but who ought to know and care a lot about it, should be willing, if necessary, to be taxed, and ought, if necessary, be taxed, in order that Bill Jones' goods may be carried in American rather than foreign bottoms. In our Republic our common good fortune is reliant on the agencies essential to that good fortune.

☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆

America at one time was practically self-contained. The world demanded our raw materials in great volume and we largely consumed at home what we manufactured. But now that we are such great importers of raw materials (which come largely from non-manufacturing countries) we must perforce send manufactured goods to these countries to balance our trade; and with the added plant capacities that we have we must find still further foreign markets for our manufactured goods to bring our overhead down.

Beyond all this, our greatest present customers owe us vast sums of money, which they can only pay if we take merchandise from them; and if we permit them to sell us merchandise we in turn must find new world markets for the surplus products which we shall thus have.

Therefore it is true — and no blindness nor unwillingness to recognize the fact can change the fact — that stability in America and restored normal prosperity must be based on development of foreign trade and foreign markets in a measure never before realized by Americans. A new era in world trade has come to America, whether America wills it or no.

☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆

The dweller on the farm, the worker in the mine, the laborer in the factory, whether he lives in Wisconsin or Kansas or New Mexico, has as much interest in an established American merchant marine as has the man who lives and toils on the docks of our great ocean port cities; because, unless America meets changed conditions from within, which I have attempted to sketch, and changed world conditions which have been brought about by the war, its export business will fail, factories will close, and there will not be profitable demand for raw materials or finished products. When export business fails and factories close, the industrial worker cannot buy the product of the farm.

☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆

No mere miracle of American genius can establish a merchant marine, for efficiency on the seas naturally belongs and is held by those nations who have the most practice on the seas. Given the same experience, Americans will have it in fullest measure—in man for man, given opportunity for experience, in greater measure than others.

☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆

For these several reasons we can have no American merchant marine save that we pay a price of time and money to get the volume and to learn the business.

☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆ ☆

Our John Smiths, our blind John Smiths, our ignorant John Smiths, our narrow John Smiths, our insular John Smiths, who know nothing and care nothing about the shipping business, should at least tax their brains to learn and see the obvious—that Bill Jones' goods are their goods, that Bill Jones' prosperity is their prosperity, that Bill Jones' adversity is their adversity, and that unless Bill Jones has an assured foreign trade, which can only be insured through American bottoms, Bill Jones will fail to prosper, and in his failure John Smith fails.

*Pacific Marine Review*

The National Magazine of Shipping

*January, 1922*

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# SOME REMINISCENCES OF OLD SAN FRANCISCO SHIPPING DAYS

By F. C. MATTHEWS

"I tell the tale as 'twas told to me
By a tattered and battered son of the sea."

SAN FRANCISCANS have always taken an active interest in matters pertaining to shipping, but particularly to sailing ships, and for many very good reasons. For years after the gold discovery practically all coast commerce was done by sailing vessels; aside from the special freight and the passengers moving by Panama steamers, nearly everything was done through the medium of what were later jocosely nicknamed "windjammers." Trans-Pacific, coastwise and even Cape Horn sailers were elaborately equipped for passenger service and, even long after the advent of steam, were able to hold their own. On the occasion of the Flying Cloud reporting a run of 992 miles in three consecutive days, the following practical statement was expressed in Harper's Monthly Magazine: "Nine hundred and ninety odd miles of ocean way, within three days' time, is not a speed to be passed over with mere newspaper mention, and it promises, if our steam-men do not look to their oars, a return to the old and wholesome service of wind and sail. We are chronicling here no imaginary run of a Flying Dutchman, but the actual performance of the A1 clipper-built, copper-fastened ship Flying Cloud, Cressy commander; and if the clipper-men can give us a line which will bowl us over the ocean at a fourteen-knot pace, and not too much spray on the quarter-deck, they will give even the Collins monsters a scramble for a triumph. There is a quiet exultation, after all, in bounding over the heaving blue wave-backs with no impelling power but the swift breath of the god of winds, which steam-driven decks can never give. It is taking nature in the fullness of her bounty and not cramping her gifts into boiling water pots; it is a trust to the god of storms, that makes the breezes our keepers and every gale to touch the cheek with the wanton and the welcome of an aiding brother."

Such romantic sentiments were freely expressed in the general press on the occasion of any special performances, and such names as Herald of the Morning, Young America, David Crockett and a host of others of the clipper fleet, as well as South American, Great Admiral, Seminole and other beautiful later-day models were household words and always in the public mind. After reading of such and such a favorite ship's rapid passage or damage through storm or any other interesting incident, Mr. Citizen with his wife and family could stroll around the waterfront; could see the object of his enthusiasm tie up to her wharf; her hatches taken off, gear rove and all arrangements

**Apportionment of Marine Disasters (exclusive of Captures) upon Arrivals and Departures in the California trade for Five Years, 1861, 1862, 1863, 1864 and 1865, calculated together, with average per centage of Loss on each route.**

| VOYAGES. | ARRIVALS. | | | | | DEPARTURES. | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | *No. Passages* | *All Disasters* | *Total Losses.* | *Per cent of all Disasters....* | *Per cent. of Total Loss...* | *No. Passages* | *All Disasters* | *Total Losses.* | *Per cent of all Disasters....* | *Per cent. of Total Loss...* |
| Between San Francisco and European ports, via Cape Horn..... | 285 | 55 | 12 | 19.33 | 4.21 | 130 | 11 | 3 | 8.46 | 2.30 |
| Eastern Atlantic ports, via Cape Horn.......... | 529 | 69 | 17 | 13.04 | 3.21 | 95 | 5 | 2 | 5.26 | 2.10 |
| Rio de Janeiro and Montevideo.......... | 28 | 2 | 1 | 7.14 | 3.57 | 3 | .. | .. | .. | .. |
| West coast of South America (sail).......... | 118 | 2 | 1 | 1.69 | .85 | 348 | 4 | 3 | 1.15 | .86 |
| New York, via Panama (steam through).......... | 185 | 6 | 1 | 3.24 | .54 | 183 | 2 | 1 | 1.09 | .54 |
| Mexican and Central American ports (sail and steam)...... ..... | 317 | 6 | 4 | 1.90 | 1.26 | 333 | 5 | 2 | 1.50 | .60 |
| Coast ports south to Scammon's Lagoon (sail and steam).......... | 2082 | 8 | 3 | .38 | .14 | 2068 | 10 | 6 | .48 | .29 |
| Colorado River (sail).......... | 45 | .. | .. | .. | .. | 52 | 2 | 1 | 3.85 | 1.93 |
| Outside Lumber and Produce ports, north (sail).......... | 3618 | 22 | 7 | .61 | .19 | 3622 | 45 | 31 | 1.24 | .85 |
| Humboldt Bay (sail).......... | 415 | 3 | 1 | .72 | .24 | 414 | 10 | 4 | 2.41 | .96 |
| Crescent City (steam only).......... | 77 | .. | .. | .. | .. | 77 | 1 | .. | 1.30 | .. |
| Portland (sail and steam).......... | 238 | 3 | 1 | 1.26 | .42 | 249 | 4 | 2 | 1.60 | .80 |
| Ports inside the mouth of Straits of Fuca (sail and steam)....... | 1460 | 35 | 8 | 2.40 | .55 | 1573 | 20 | 6 | 1.27 | .38 |
| Sitka and Kodiac.......... | 40 | 1 | .. | 2.50 | .. | 36 | .. | .. | .. | .. |
| Hongkong.......... | 165 | 17 | 8 | 10.30 | 4.84 | 206 | 9 | 4 | 4.37 | 1.94 |
| Shanghae.......... | 35 | 2 | 1 | 5.71 | 2.85 | 60 | 10 | 6 | 16.66 | 10.00 |
| Foo Chow.......... | 8 | .. | .. | .. | .. | 1 | .. | .. | .. | .. |
| Manila.......... | 33 | 10 | 3 | 30.00 | 9.09 | 29 | .. | .. | .. | .. |
| Kanagawa.......... | 30 | .. | .. | .. | .. | 17 | 1 | .. | 5.88 | .. |
| Amoor River.......... | 15 | .. | .. | .. | .. | 15 | 1 | .. | 6.66 | .. |
| Saigon, Singapore, Bombay, Guam and Akyab.......... | 6 | .. | .. | .. | .. | 13 | 1 | 1 | 7.69 | 7.69 |
| Batavia.......... | 11 | 1 | 1 | 9.10 | 9.10 | 2 | .. | .. | .. | .. |
| Sandwich Islands.......... | 133 | .. | .. | .. | .. | 151 | .. | .. | .. | .. |
| Society Islands.......... | 69 | .. | .. | .. | .. | 55 | .. | .. | .. | .. |
| Australian ports.......... | 150 | 11 | 1 | 7.33 | .67 | 118 | 5 | 2 | 4.24 | 1.70 |
| Cape Town.......... | .. | .. | .. | .. | .. | 5 | .. | .. | .. | .. |
| Guano Islands in the Pacific.......... | 5 | .. | .. | .. | .. | 29 | 14 | 9 | 51.72 | 31.00 |

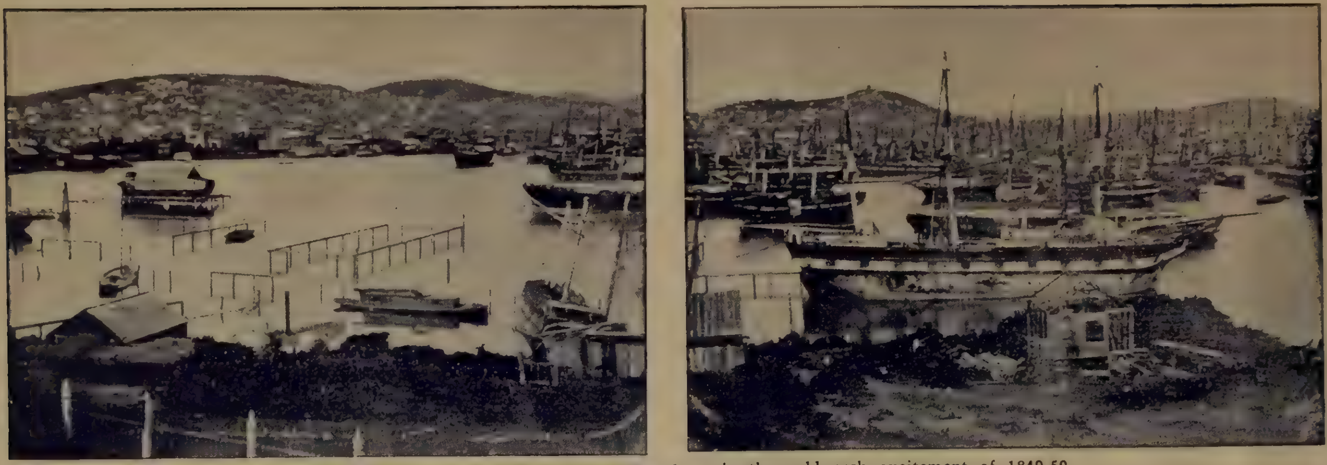
**Comparison of Disasters for Five Years, 1861 to 1865, both inclusive.**

| | 1861 | 1862 | 1863 | 1864 | 1865 |
|---|---|---|---|---|---|
| Total Disasters.... | 60 | 112 | 114 | 113 | 89 |
| Total Losses...... | 20 | 42 | 43 | 41 | 36 |
| Total Part'l losses | 40 | 70 | 71 | 72 | 53 |
| Dis. in China trade | 2 | 17 | 12 | 5 | 4 |
| Dis. in Coast trade | 22 | 32 | 47 | 26 | 46 |
| Dis. to Amer. ves.. | 47 | 88 | 89 | 78 | 73 |
| British vessels.... | 6 | 12 | 16 | 22 | 9 |
| Columbian vessels. | 2 | 3 | .. | 2 | .. |
| French vessels.... | 1 | 2 | .. | 4 | 1 |
| Mexican vessels.. | 1 | 2 | 1 | .. | .. |
| Peruvian vessels.. | .. | 1 | .. | .. | .. |
| Danish vessels.... | .. | 1 | 1 | 1 | .. |
| Swedish vessels... | .. | 1 | .. | .. | .. |
| Hamburg vessels.. | 1 | 1 | 3 | 1 | 2 |
| Hanover vessels.. | .. | 1 | .. | 1 | .. |
| Chile vessels...... | 1 | .. | .. | .. | 1 |
| Norwegian vessels | .. | .. | 1 | .. | .. |
| Russian vessels... | .. | .. | 1 | .. | .. |
| Dutch vessels..... | .. | .. | 1 | 1 | .. |
| Bremen vessels... | .. | .. | 1 | 1 | .. |
| Prussian vessels .. | .. | .. | .. | .. | 1 |
| Hawaiian vessels.. | .. | .. | .. | 1 | .. |
| Italian vessels.... | .. | .. | .. | 1 | 2 |
| Lives Lost........ | not est | not est | 169 | 186 | 307 |
| Cap. by Conf. Pir. | .. | 1 | 4 | 2 | 8 |
| Expl. inl'd waters | 1 | .. | 1 | 4 | 1 |
| Accidents in and enter'g and leav'g San Francisco... | 9 | 9 | 9 | 4 | 10 |
| Accidents on Bay and rivers San F. | 4 | 11 | not est | 13 | 6 |

TOTAL AMOUNTS LOST.

| 1861. | 1862. | 1863. | 1864. | 1865. |
|---|---|---|---|---|
| $1,722,347 | $6,518,109 | $4,326,115 | $3,185,115 | $2,378,320 |

Statistics photographed from an old file copy of the Mercantile Gazette and Prices Current of January 1, 1866, showing vital statistics of Pacific Coast shipping in the old sailing days

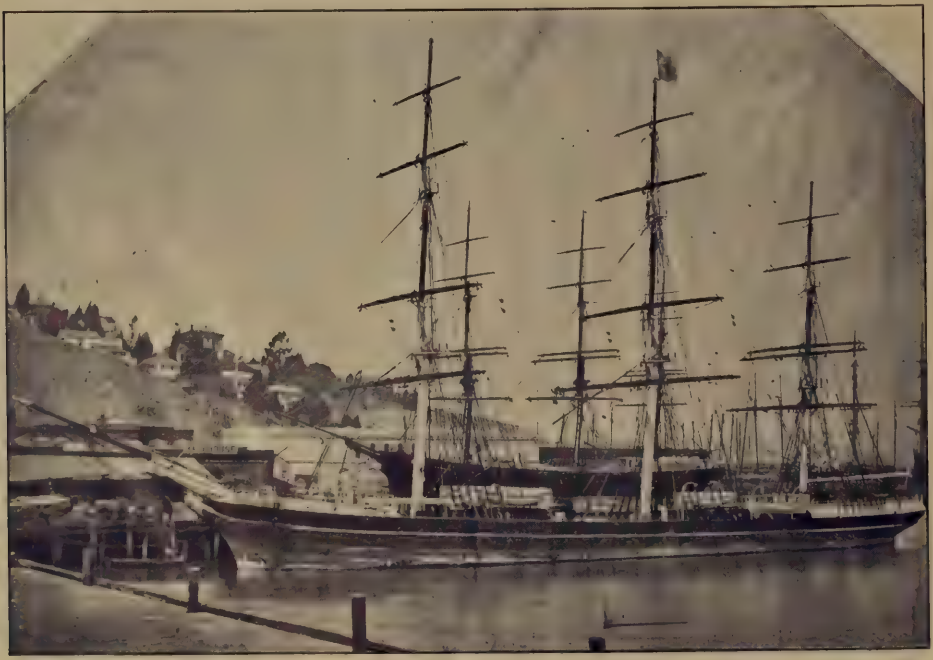


Four views forming a panorama of San Francisco's waterfront in the gold rush excitement of 1849-50

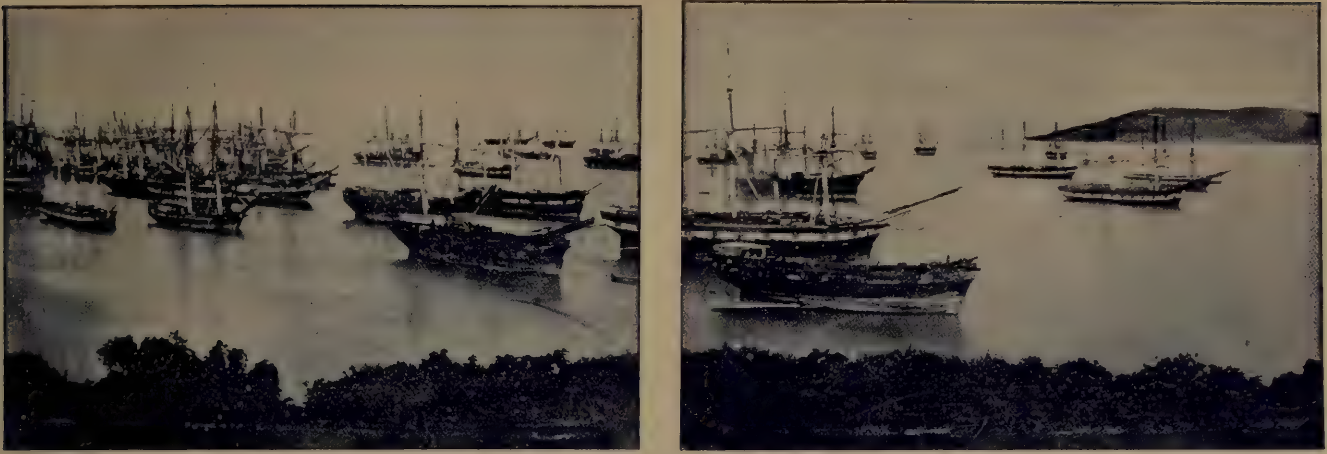
made for discharge; get the pungent odors of the cargoes, which to a landsman were delicious, particularly in those vessels from China, the East Indies, the South Sea Islands. There were no fenced-in, closely-guarded, covered docks in those days; open wharves they were called, and commercialism and distrust were not paramount. Mr. Common-People could even go aboard his favorite and, with ordinary prudence in not getting in the way of the work then going on, could stroll all over the decks; watch at the hatches the stevedores in the hold and the freight hoisted to yard-arm before being swung to the wharf. From topgallant fo'castle a fine survey could be had of the symmetrical network of masts, spars and rigging and the beautifully kept decks. Of course some owners did have "No Admittance" signs at gangways: "Look Out for the Dog" or "Keep Out—This means You"; but to one properly conducting himself, observance of these drastic notices was not often insisted on.

Suppose we outline in a general way the voyage of from New York to San Francisco. Her cargo is aboard and is extremely miscellaneous: marble and machinery; coals and coffins; liquors and lumber; paints and pianos; hats and hardware. The shipping articles call for "A voyage to San Francisco: at and from thence to such other ports or places in the Pacific Ocean, East Indies, China, the China Seas, or Europe, in a general trading or freighting voyage, for a term not to exceed twenty-four calendar months and back to a final port of discharge on the Atlantic Coast in the United States, either via Cape Horn or the Cape of Good Hope, or, should the master so elect, direct back to New York or some other Atlantic port in the United States from the said port of San Francisco." The shipping master has been told to send on board any good men who applied to him, giving the preference to Norwegians and Swedes; Germans and Scotchmen were to be favored next; then Englishmen and Irishmen, "for these had been found, though often capital seamen, yet not to as readily as some others endure privations without grumbling, while also being too strong republicans to be always submissive subjects of a despotic government such as that of shipboard. As to American sailors, they are unfortunately not often in the choice. They are soon promoted from the forecastle, if they enter it, or else after short service find that they can do better on shore than by leading a dog's life at sea." The quotations are from the captain of our ship; a thorough navigator, strict disciplinarian, yet withal kind and humane, and so known at all ports of the world.

Our ship is alongside the wharf, captain, pilot and



**The British ship Grisedale, 1222 tons, 240 feet long, 36 feet beam; built at Liverpool in 1875; one of the favorite ships of the Dale Line of Liverpool-San Francisco grain packets; Balfour, Guthrie and Company, agents. Ship is lying at one of the old San Francisco wharves opposite the northeast shoulder of Telegraph Hill close to the foot of Battery street.**



Four views forming a panorama of San Francisco's waterfront in the gold rush excitement of 1849-50

crew all aboard. A fine westerly breeze will enable her to sail directly to sea. The jib, foretopsail and main topmast-staysail are loosed; the bow lines cast off; the mizzen topsail is loosed and the stern fasts let go; she leans over and shoots swiftly away without a hitch, the applause of a cheering throng showing appreciation of a fine performance. The bar is crossed and the pilot leaves the ship with a cool "Good morning," as though he was merely going down town for a little business and would certainly be back to dinner. The topmast sternsail booms are gotten up, run out and their sails set and the log shows better than ten knots. The anchors being secured and everything movable about decks made fast, a genuine feeling of satisfaction is felt fore and aft over the auspicious commencement of the long voyage.

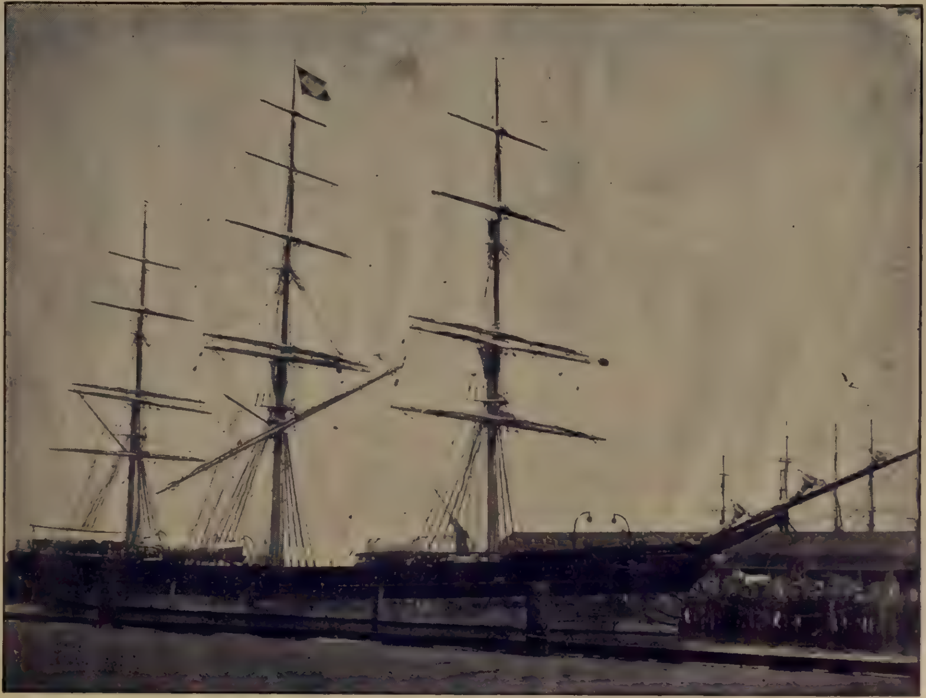
For the first week or so from port, our ship will be heading nearly in the direction of the Straits of Gibraltar to make sufficient "Easting" to obtain a slant enabling her to weather Cape St. Roque, the most easterly point of the South American continent. Everything progresses favorably.

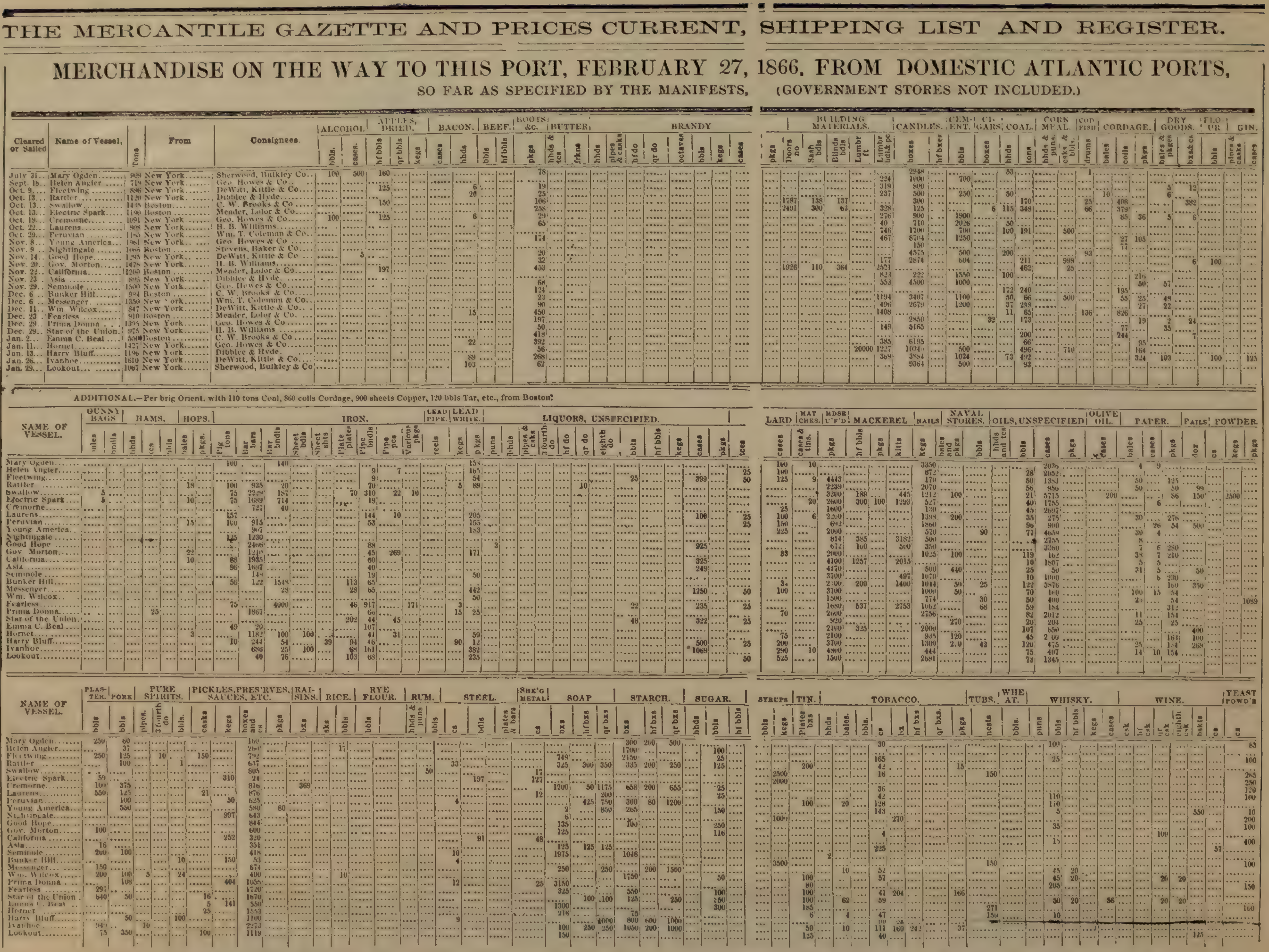
### "Full and Plenty"

The crew, at only $15 per month, is a model one and, though under strict officers, they are not driven, as, knowing their duties, they are willing workers. The food is well cooked and is good, even though this is not the day of pure-food laws: the policy of the time is "full and plenty," before legislation initiated the English law of "pound and pint," which enabled those who provided the supply to substitute and do about as they pleased. The passengers have gotten their sea legs; their cabin accommodations and food are all that could be expected, and if at all interested in the working of the ship, they find the time pass quickly and pleasantly. There is an organ or melodeon on board as well as a small but well selected library. Sometimes there is the sight of a passing ship or a school of whales and now and then a flying-fish falls on deck or a dolphin or swordfish is caught and turned over to the steward. There is no monotony to one with an active mind.

So fanning through the dolrums and making good progress in the trades, without experiencing any mischievous pamperos, the Straits of Le Maire are come up with and passed through. Favorable weather conditions continue and the passage round the dreaded Horn made with all sail set. No westerly gales drive

**The American ship Mariposa taken at a San Francisco wharf about 1880. The Mariposa was 220 feet long by 34 feet beam and registered 1091 tons. She was originally the Jessie Osborne of Liverpool, built at Dumbarton in 1874. She went ashore north of The Heads off San Francisco in September, 1878, was abandoned, sold, floated, repaired in San Francisco, and renamed Mariposa. In 1882 on her arrival from San Francisco at Liverpool she was purchased by her original owners and given her old name.**





# THE MERCANTILE GAZETTE AND PRICES CURRENT, SHIPPING LIST AND REGISTER.

## MERCHANDISE ON THE WAY TO THIS PORT, FEBRUARY 27, 1866, FROM DOMESTIC ATLANTIC PORTS,

SO FAR AS SPECIFIED BY THE MANIFESTS, (GOVERNMENT STORES NOT INCLUDED.)

| Cleared or Sailed | Name of Vessel. | Tons | From | Consignees. |
|---|---|---|---|---|
| July 31 | Mary Ogden | 909 | New York | Sherwood, Bulkley Co. |
| Sept. 18 | Helen Angier | 719 | New York | Geo. Howes & Co. |
| Oct. 9 | Fleetwing | 896 | New York | DeWitt, Kittle & Co. |
| Oct. 13 | Rattler | 1120 | New York | Dibblee & Hyde |
| Oct. 13 | Swallow | 1435 | Boston | C. W. Brooks & Co |
| Oct. 13 | Electric Spark | 1190 | Boston | Meader, Lolor & Co. |
| Oct. 19 | Cremorne | 1091 | New York | Geo. Howes & Co. |
| Oct. 22 | Laurens | 808 | New York | H. B. Williams |
| Oct. 29 | Peruvian | 1165 | New York | Wm. T. Coleman & Co. |
| Nov. 8 | Young America | 1961 | New York | Geo. Howes & Co |
| Nov. 9 | Nightingale | 1065 | Boston | Stevens, Baker & Co. |
| Nov. 14 | Good Hope | 1295 | New York | DeWitt, Kittle & Co |
| Nov. 20 | Gov. Morton | 1478 | New York | H. B. Williams |
| Nov. 22 | California | 1200 | Boston | Meader, Lolor & Co. |
| Nov. 23 | Asia | 896 | New York | Dibblee & Hyde. |
| Nov. 29 | Seminole | 1500 | New York | Geo. Howes & Co. |
| Dec. 6 | Bunker Hill | 994 | Boston | C. W. Brooks & Co. |
| Dec. 6 | Messenger | 1350 | New York | Wm. T. Coleman & Co. |
| Dec. 11 | Wm. Wilcox | 847 | New York | DeWitt, Kittle & Co. |
| Dec. 23 | Fearless | 910 | Boston | Meader, Lolor & Co. |
| Dec. 29 | Prima Donna | 1395 | New York | Geo. Howes & Co |
| Dec. 29 | Star of the Union | 975 | New York | H. B. Williams |
| Jan. 2 | Emma C. Beal | 550 | Boston | C. W. Brooks & Co |
| Jan. 11 | Hornet | 1427 | New York | Geo. Howes & Co. |
| Jan. 13 | Harry Bluff | 1196 | New York | Dibblee & Hyde. |
| Jan. 26 | Ivanhoe | 1610 | New York | DeWitt, Kittle & Co. |
| Jan. 29 | Lookout | 1067 | New York | Sherwood, Bulkley & Co |

ADDITIONAL.—Per brig Orient, with 110 tons Coal, 860 coils Cordage, 900 sheets Copper, 120 bbls Tar, etc., from Boston.

Interesting tables reproduced from old San Francisco commercial journals showing the character of San Francisco's intercoastal traffic in 1866. Return cargoes were largely grain our good ship back into the Atlantic, as often happens, not only once, but at times twice or thrice.

The Pacific does not belie its name and after some glorious sailing in the trades, with a short spell of calms between, the Farallones are sighted and the voyage is practically over. The pilot is picked up; runners from stevedores, boardinghouses and supply stores hook onto the ship's channels and the ship's company soon know the stirring events of the past four months. With a fresh westerly wind and a young flood tide, no tug is required to assist through the Gate and up the Bay, and rounding Telegraph Hill the anchor is dropped and the voyage has been successfully accomplished.

### San Francisco

The newspapers of the following morning contain a card advertisement wherein the crew eulogize the ship, captain and officers and say they never expect to make a more pleasant voyage. A well-merited compliment for all concerned, though quite a rarity, due in a great measure to iniquitous shipping masters.

At the time under discussion the harbor of San Francisco contained the flags of practically every maritime nation. An instance of its cosmopolitan character will appear in the case of the American ship Carlisle, 1181 tons, from New York. This vessel was forced into Rio de Janeiro in distress and there condemned. Her cargo was forwarded to San Francisco by seven small vessels and no two carried the same flag. The list follows:

American bark Flora, 194 tons.
Hamburg bark Esther Sophie, 310 tons.
Hanoverian brig Commandeur, 201 tons.
Austrian brig Tiger, 225 tons.
Schleswig-Holstein bark Candace, 200 tons.
Prussian bark Forget-me-not, 250 tons.
British bark Hermine, 207 tons.

The smallest vessel of the fleet, the Flora, made the fastest time, eighty-five days.

### Siamese Flag

Another instance proving San Francisco to be able to exhibit things strange and uncommon was the appearance about this time of the ship Silas Greenman, flying the White Elephant flag of Siam. Considerable newspaper comment was made some five years since relative to the probable arrival here of a Siamese vessel, the statement appearing that such would be the first appearance of that flag. It is true, however, that what the present generation of waterfront enthusiasts missed was accorded the critics of a half century ago.

### Laid on for China

Our ship proceeds to her wharf and starts discharging with the aid of donkey engines. Aside from bulk cargo, nothing is landed but what will be taken delivery of the same day. No work is done during rainy weather, so that at times progress is slow; but event-

## RECAPITULATION:

| | | | |
|---|---|---|---|
| **Grain** | **Charters,** | 12,263 | **tons.** |
| **Lumber,** | " | 26,018 | " |
| **Guano,** | " | 20,288 | " |
| **Copper Ore,** | " | 9,895 | " |
| **Coal,** | " | 12,070 | " |
| **Hides, Wool, etc.,** | " | 29,051 | " |
| **Miscellaneous** | " | 44,352 | " |
| **Foreign** | " | 28,540 | " |
| | | 182,447 | " |
| **Sailed without Charter,** | | 23,781 | " |
| **Total, for 1865** | | 206,258 | " |

### Tonnage Movement of the Port during the Year 1865.

Statement of Tonnage entering and clearing at the Port of San Francisco during the Fourth Quarter of 1865, and the Totals for the Year:

ARRIVALS.

| From | 4TH QUARTER '65 | | Total | [illegible] |
|---|---|---|---|---|
| | No Vessels | Tons. | No. Vessels | Tons. |
| Domestic Atlantic Ports | 15 | 16,062 | 80 | 85,797 |
| Domestic Pacific Ports | 409 | 85,991 | 1,643 | 302,376 |
| Great Britain | 10 | 6,988 | 26 | 19,879 |
| France | 5 | 2,646 | 14 | 6 677 |
| Germany | [illegible] | 1,026 | 7 | 2,418 |
| China | 17 | 11,013 | 52 | 35,346 |
| Japan | 5 | 2,091 | 11 | 5,324 |
| Manila | 0 | .... | 6 | 5,575 |
| Australia | 13 | 6,787 | 32 | 15,240 |
| Batavia | 1 | 281 | [illegible] | 451 |
| Calcutta | [illegible] | .... | 1 | 377 |
| Java | 0 | .... | [illegible] | 626 |
| Cuba | 1 | 422 | 1 | 422 |
| Ponce, P. R. | 0 | | 1 | 150 |
| Chile | [illegible] | 2,339 | [illegible] | 11,312 |
| Peru | 2 | 1,160 | 9 | 3,254 |
| Rio de Janeiro | 0 | .... | 3 | 1,201 |
| Malaga | 0 | .... | 1 | 359 |
| Genoa | 0 | .... | 1 | 374 |
| Panama, New Grenada | 7 | 23,275 | 30 | 90,883 |
| Central America | 3 | 5,085 | 17 | 18,455 |
| British Columbia | 12 | 7,442 | 52 | 45,480 |
| Mexican Ports | 16 | 7,917 | 44 | 26,097 |
| Hawaiian Islands | 7 | 2,382 | 36 | 12,396 |
| Society Islands | 4 | 897 | 15 | 2,939 |
| Baker's Island | [illegible] | .... | 1 | 1,080 |
| Russian Possess'ns, N.W.C. | 4 | 1,545 | 10 | 5,193 |
| Russian Possessions, Asia | 5 | 1,146 | 6 | 1,255 |
| Whaling Voyages | 18 | 5,458 | 32 | 7,960 |
| Total arrivals | 560 | 191,954 | 2,168 | 708,656 |

RECAPITULATION—FOURTH QUARTER 1865.

| | No. vessels. | Tons. |
|---|---|---|
| American vessels arrived from Domestic Ports | 424 | 102,053 |
| American vessels arrived from Foreign Ports | 57 | 51,205 |
| American vessels arrived from whaling voyage | 18 | 5,458 |
| Foreign vessels arriyed from Foreign Ports | 61 | 33,238 |
| Total Fourth Quarter | 560 | 191,954 |

RECAPITULATION FOR THE YEAR 1865.

| | No. vessels. | Tons |
|---|---|---|
| American vessels arrived from Domestic Ports | 1,723 | 388,173 |
| American vessels arrived from Foreign Ports | 195 | 173,303 |
| American vessels arrived from whaling voyages | 32 | 7 960 |
| Foreign vessels arrived from Foreign Ports | 218 | 139,220 |
| Total arrival for the year | 2,168 | 708,656 |

CLEARANCES.

| For | 4TH QUARTER '65 | | TOTAL, 1865. | |
|---|---|---|---|---|
| | No Vessels | Tons. | No Vessels | Tons. |
| Domestic Atlantic Ports | 10 | 9,470 | 25 | 27,135 |
| Domestic Pacific Ports | 54 | 37,112 | 178 | 98,705 |
| Great Britain | 6 | 4,525 | 18 | 14 049 |
| China | [illegible] | 5,684 | 43 | 33,536 |
| Japan | 1 | 199 | [illegible] | 946 |
| Manila | 3 | 1,849 | 10 | 9,134 |
| Calcutta | — | — | 1 | 1,166 |
| Australia | 11 | 4,831 | 21 | 9,916 |
| Chile | 2 | 1,389 | 32 | 14,156 |
| Peru | 21 | 15,895 | 50 | 43,245 |
| Bolivia | 1 | 532 | 1 | 532 |
| Montevedio | — | — | 2 | 1 317 |
| Panama, N. G. | [illegible] | 28,194 | 32 | 96,106 |
| Central America | 5 | 5 267 | 22 | 22,194 |
| British Columbia | 13 | 4,013 | 84 | 54,785 |
| Mexican Ports | 12 | 8,402 | 59 | 28,839 |
| Hawaiian Islands | 12 | 6,337 | 47 | 18,390 |
| Society Islands | 3 | 320 | 11 | 1,892 |
| Mauritius | 2 | 789 | 3 | 1,856 |
| Guam | 2 | 1,125 | 2 | 1,125 |
| Cape of Good Hope | 1 | 109 | 1 | 109 |
| Russian Poss'ns, N. W. C. | 1 | 528 | [illegible] | 4,317 |
| Russian " Asia | — | — | [illegible] | 290 |
| Exploring Expedition | — | — | 1 | 183 |
| Whaling Voyages | 23 | 6,023 | 36 | 8,285 |
| Total clearances | 200 | 142,594 | 699 | 491,708 |

RECAPITULATION—FOURTH QUARTER 1865.

| | No. vessels. | Tons. |
|---|---|---|
| American vessels cleared for Domestic Ports | 55 | 40,441 |
| Foreign vsseels cleared for Domestic Ports | 9 | 6,142 |
| American vessels cleared for Foreign Ports | 63 | 60,606 |
| Foreign vessels cleared for Foreign Ports | 50 | 29,382 |
| American vessels cleared for Whaling voyages | 23 | 6,023 |
| Total | 200 | 142,594 |

RECAPITULATION FOR THE YEAR 1865.

| | No. vessels. | Tons. |
|---|---|---|
| American vessels cleared for Domestic Ports | 183 | 113,244 |
| Foreign vessels cleared for Domestic Ports | 19 | 11,036 |
| American vessels cleared for Foreign Ports | 294 | 277,937 |
| Foreign vessels cleared for Foreign Ports | 167 | 81,206 |
| American vessels cleared for Whaling Voyages | 36 | 8,285 |
| Total | 699 | 491,708 |

**The arrivals afford at all times the correct index of the Domestic coasting trade, while the clearances merely show the number of vessels departing with Foreign merchandise on board in excess of a value of $400.**

### Passenger Movement of the Port.

Statement of the number of Passengers by Sea arriving at and departing from the Port of San Francisco during the First, Second, Third and Fourth Quarters of 1865, as declared at the Custom House:

ARRIVALS.

| FROM | 1st Qr | 2d Qr. | 3d Qr. | 4th Qr | Total. |
|---|---|---|---|---|---|
| Panama, N. G | 1,988 | 4,006 | 4 397 | 4,572 | 14,963 |
| San Juan del Sur | 1,406 | 452 | 900 | 917 | 3,675 |
| Victoria, and Coastwise | 286 | 280 | 554 | 401 | 1,521 |
| China | 300 | 20,32 | 614 | 151 | 3,097 |
| Japan | 6 | [illegible] | 62 | 20 | [illegible] |
| Europe, direct | 16 | 15 | .... | 27 | [illegible] |
| Eastern Ports, direct | 1 | 1 | 19 | 14 | [illegible] |
| Australia | 49 | 153 | 55 | 70 | 327 |
| Mexico | 266 | 457 | 269 | 383 | 1,375 |
| Sandwich Islands | 124 | 166 | 143 | 119 | 552 |
| Other Countries: | 17 | 18 | 37 | [illegible] | 85 |
| Total | 4,459 | 7,588 | 7,050 | 6,687 | 25,784 |

DEPARTURES.

| TO | 1st Qr | 2d Qr. | 3d Qr. | 4th Qr | Total. |
|---|---|---|---|---|---|
| Panama. N, G | 2,468 | 3,801 | 4,210 | 4,550 | 15,029 |
| San Juan del Sur | 2,129 | 2,088 | 1,575 | 1,681 | 7,473 |
| Victoria and Coastwise | 1,691 | 1,133 | 490 | 32 | 3,346 |
| China | 179 | [illegible] | 604 | 1,154 | 2,298 |
| Japan | [illegible] | 4 | 2 | 1 | 13 |
| Europe, direct | .... | .... | .... | .... | ...... |
| Eastern Ports, direct | .... | .... | .... | .... | ...... |
| Australia | 15 | 30 | 28 | 17 | 90 |
| Mexico | 231 | 183 | 170 | 299 | 883 |
| Sandwich Islands | 107 | 151 | 162 | 103 | 523 |
| Other Countries | 17 | 22 | 24 | 58 | 121 |
| Total | 6,843 | 7,773 | 7,265 | 7,895 | 29,776 |

RECAPITULATION.

| | 1st Qr. | 2d Qr. | 3d Qr. | 4th Qr | Total. |
|---|---|---|---|---|---|
| Arrivals | 4,459 | 7 588 | 7,050 | 6,687 | 25,784 |
| Departures | 6,843 | 7,773 | 7,265 | 7,895 | 29,776 |
| Loss | 2,384 | 185 | 215 | 1,208 | 3,992 |

This is the first in a period of eight years that the departures seaward have exceeded the arrivals. For the previous seven years the gain in arrivals has been as follows:

| Years. | No. | Years. | No. |
|---|---|---|---|
| 1864 | 9,773 | 1860 | 16,185 |
| 1863 | 15,882 | 1859 | 13,402 |
| 1862 | 14,771 | 1858 | 12,746 |
| 1861 | 16,864 | | |

| | |
|---|---|
| Total gain in seven years | 99,623 |
| Total loss in 1865 | 3,992 |
| **Net gain for eight years** | **95,631** |

Passenger and tonnage movements from San Francisco in the year 1865

## SHIPPING AND COMMISSION MERCHANT

J. W. Grace. James F. Chapman.

## J. W. GRACE & CO.,

**Shipping and Commission Merchants**

No. 40 California Street.

Special attention paid to consignment and chartering of shipping, purchase and shipment of Oregon Pine and Redwood, Wheat, Barley, Provisions, Quicksilver and all other products.

Consignments of Coal, Iron, Nitrate of Soda, Coffee, etc., solicited, upon which liberal advances will be made.

**GRACE BROS. & CO., Callao, Peru.**

**W. R. GRACE & CO., New York.**

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## MERCHANTS' TOW-BOAT LINE.

THE POWERFUL STEAM TUGS

**Richard Holyoke,**

—AND—

**Donald.**

For towage apply on board, foot of Harrison street, or at the office, 271 East Street, 8 doors south of Market.

aug27 **P. N. PREBLE, Agent.**

## Vessels on the Way

Monday, December 23, 1878.

### New York.

| Vessels and Captains. | Tons. | Rate. | Consignees. | Days |
|---|---|---|---|---|
| Ship Abner I Benyon, Watts | 2044 | 33L11 | Geo Howes & Co | 128 |
| Ship Great Western, Simmons | 1502 | —— | Williams, B & Co | 124 |
| 2Ship W R Grace, Black | 1893 | 33L11 | Geo Howes & Co | 109 |
| 5Ship Templar, Armstrong | 947 | A1½ | Williams, Blanc'd&Co | 99 |
| Ship Charles Dennis, Jackson | 1710 | 33L11 | Geo Howes & Co. | 95 |
| Ship Sovereign of the Seas, Wood | 1582 | A1 | Geo Howes & Co | 82 |
| Ship St Stephen, Douglass | 1392 | 33L11 | Geo Howes & Co | 68 |
| Ship Carrolton, Lewis | 1450 | 33L11 | Williams, B & Co. | 63 |
| Ship Annie H Smith, Bartlett | 1504 | 33L11 | Geo Howes & Co | 63 |
| Ship Alfred D Snow, Willey | 2075 | A1 | Geo Howes & Co | 39 |
| Ship Continental, Clark | 1712 | 33L11 | Geo Howes & Co | 23 |
| Ship Triumphant, Gibbons | 2048 | 33L11 | Williams, B & Co. | 10 |
| Ship Seminole, Holmes | 1511 | A1 | Geo Howes & Co | 9 |
| Ship St Nicholas, Stackpole | 1798 | 33L11 | Geo Howes & Co | — |
| Ship Young America, Baker | 1459 | A1 | Geo Howes & Co | — |
| Ship Enoch Soule, Lawrence | 1519 | 33L11 | Geo Howes & Co | — |
| Ship Conqueror, Gould | 1621 | 33L11 | Williams B & Co | — |
| Ship Bohemia, Trask | 1633 | 33L11 | Geo Howes & Co. | — |
| Ship Gatherer, Thomson | 1500 | 33L11 | Williams, B & Co. | — |
| Ship M P Grace, Wilbur | 1928 | 33L11 | Geo Howes & Co | — |
| Ship St David, Scribner | 1536 | 33L11 | Geo Howes & Co | — |

### Boston.

| Vessels and Captains. | Tons. | Rate. | Consignees. | Days |
|---|---|---|---|---|
| Bark Rambler, Carter | 1017 | (new) | C L Taylor & Co | 38 |
| Bark Emma T Crowell, Perry | 1400 | (new) | C L Taylor & Co | — |

### Philadelphia.

| Vessels and Captains. | Tons. | Rate. | Consignees. | Days |
|---|---|---|---|---|
| Ship Palmyra, Minot | 1360 | 33L11 | W T Coleman & Co | 129 |
| 4Ship St Lucie, Rivers | 1319 | 33L11 | Geo Howes & Co, | 54 |
| Ship Valparaiso, Peterson | 1243 | A1 | Geo Howes & Co | 17 |
| Ship San Joaquin, Drinkwater | 1637 | 33L11 | WmTColeman &Co | — |
| Ship Standard, Piercy | 1535 | (new) | Geo Howes & Co | — |
| Ship Frank N Thayer, Mack | 1648 | (new) | Geo Howes & Co | — |

### Bombay.

| Vessels and Captains. | Tons. | Rate. | Consignees. | Days |
|---|---|---|---|---|
| Am ship Red Cloud, Taylor | 2100 | (new) | | 107 |

### Bordeaux.

| Vessels and Captains. | Tons. | Rate. | Consignees. | Days |
|---|---|---|---|---|
| 10Fr bark Guayaquil, Dejean | 532 | LC3 | A Vignier | 114 |
| Fr bark Delphine Melanie, Barataux | 422 | 3L11 | H Schroder & Co | 14 |
| Fr bark Maipu, Mainguy | 678 | LC12 | A Vignier | — |

### Calcutta.

| Vessels and Captains. | Tons. | Rate. | Consignees. | Days |
|---|---|---|---|---|
| Br ship Knight Commander, Smith | 1435 | *A1 | Balfour, Guth&Co | 74 |
| Br ship Naiad‡, Smith | 1039 | 100A1 | Degener & Co | 9 |

### Departure Bay.

| Vessels and Captains. | Tons. | Rate. | Consignees. | Days |
|---|---|---|---|---|
| Br bark Earl Dalhousie, Jarvis | 1047 | A1 | Dunsm'r, Diggle & Co | — |
| Bol bark Catalina, Austin | 740 | —— | Dunsm'r, Diggle&Co | — |

Sept 16—CHAS DENNIS—New York, to Geo Howes & Co—15 cs boots and shoes, 220 tons coal, 2 coils cordage, 507 bars iron, 1558 bdls 110 pcs iron pipe, 143 pks w lead, 3257 kgs nails, 75 bbls naval stores, 200 cs kerosene, 921 pkgs paper, 250 bbls plaster, 1878 cs case goods, 1250 cs spirits turpentine, 600 pkgs starch, 250 bbls sugar, 59 cs tobacco, 31 bbls whisky.

Oct 1—SOVEREIGN OF THE SEAS—New York, to Geo Howes & Co—112 cs boots and shoes, 230 tons coal, 200 do pig iron, 704 pkgs iron, 509 plates do, 361 bdls iron pipe, 337 pkgs w lead, 1200 kegs nails, 200 pkgs 510 bbls naval stores, 1045 pkgs paper, 50 bbls plaster, 950 cs case goods, 60 bbls rum, 463 bxs soap, 500 cs spirits turpentine, 2465 pkgs starch, 80 cs tobacco, 50 bbls 70 h do whisky.

Oct 12—ST STEPHEN—New York, to Geo Howes & Co—150 tons coal, 253 tons pig iron, 507 bars iron, 77 pkgs iron, 515 bdls iron pipe, 190 pcs do, 143 pkgs w lead, 2065 kegs nails, 123 pkgs 150 bbls naval stores, 3000 cs kerosene, 695 pkgs paper, 250 bbls plaster, 1375 cs case good, 195 bxs soap, 750 cs spts turpentine, 60 cs tobacco, 174 bbls whisky.

Oct 25—CARROLTON New York, to Geo Howes & Co—300 bbls cement, 300 tons coal, 100 tons pig iron, 4657 pkgs iron, 1172 pcs iron pipe, 504 pkgs w lead, 3376 kegs nails, 20 bbls 90 pkgs naval stores, 2000 cs kerosene, 848 pkgs paper, 1932 cs case goods, 950 bxs soap, 4140 pkgs starch, 15 hhds tobacco, 324 bbls whisky.

Nov 12—RAMBLER—Boston, to C L Taylor & Co—100 tons coal 211 pkgs cordage, 100 tons pig iron, 1277 pkgs 400 bars iron, 873 plts iron, 1050 kegs nails, 25 bbls naval stores, 3000 cs kerosene, 100 bbls pork, 567 pkgs paper, 1200 cs case goods, 25 cs spirits turpentine, 25 bbls whisky.

Oct 26—ST LUCIE—Philadelphia, to Geo Howes & Co—199 hhds 225 tons coal, 473 pkgs cordage, 168 bars 1266 pkgs iron, 305 bdls sheet iron, 51 sheets iron, 2174 bdls iron pipe, 150 pcs do bars, 1000 kegs nails, 1000 cs kerosene, 570 cs case goods, 45 cs tobacco, 25 bbls whisky.

Oct 31—ANNIE H SMITH—New York, to Geo Howes & Co—103 tons coal, 153 tons pig iron, 100 pkgs iron, 187 plates do, 2457 bdls 355 pcs iron pipe, 227 pkgs w lead, 1050 kegs nails, 250 pkgs 475 bbls naval stores, 500 cs kerosene, 419 pkgs paper, 600 bbls plaster, 630 cs case goods, 70 bxs soap, 1150 pkgs starch, 445 bxs tinplate, 62 cs tobacco, 235 bbls 60 hf do whisky.

### Recapitulation.

| | | | |
|---|---|---|---|
| Boots and Shoes, cs | 137 | Nails, kegs | 32,314 |
| Cordage, pkgs | 742 | Paper, pkgs | 7,582 |
| Cement, bbls | 367 | Plaster, bbls | 1,777 |
| Coal tons | 2,221 | Pork, bbls | 35 |
| hhds | 199 | Rum, bbls | 60 |
| Case Goods, cs | 13,042 | Sugar, bbls | 625 |
| Candles, bxs | 1,409 | Soap, bxs | 2,328 |
| Iron—Pig, tons | 1,943 | Spirits Turpentine, cs | 7,025 |
| bars | 1,781 | Starch, pkgs | 13,876 |
| pkgs | 14,639 | Tinplate, bxs | —— |
| plates | 2,201 | Tobacco, cs | 332 |
| Sheet, bdls | 1,586 | hhds | 54 |
| plates | 51 | White Lead, pkgs | 2,557 |
| Pipe, bdls | 14,301 | Whisky, bbls | 1,474 |
| pcs | 2,228 | hf bbls | 183 |
| Kerosene, cs | 16,540 | Wine, csks | —— |
| Naval Stores, pkgs | 823 | cs | 288 |
| bbls | 1,525 | | |

## CUSTOM HOUSE DUTIES LEVIED ON FOREIGN IMPORTATIONS.

In addition to the duties named below, a discriminating duty of 10 per cent. ad valorem is levied on all imports under flags that have no reciprocal treaties with the United States.

On all goods, wares, and merchandise, of the growth or produce of countries east of the Cape of Good Hope, when imported from places this side of the Cape of Good Hope, a duty of 10 per cent. ad valorem is levied in addition to the duties imposed on any such article when imported directly from the place or places of their growth or production, raw cotton, wool, and raw silk excepted. Duties payable in gold. The ton in all cases to be 2240 lbs.

**Ashes**—Pot, 20 ℔ cent. ad valorem; pearl, 1½ cts ℔ lb.

**Anchors**—2½ cts ℔ lb.

**Antimony, Regulus**—10 ℔ cent.

**Beeswax**—20 ℔ cent. ad valorem

**Bread**—30 ℔ cent. ad valorem

**Bristles**—15 cts ℔ lb

**Corks**—30 ℔ ct. ad valorem.

**Chains**—2½ cts ℔ lb.

**Chicory**—1 ct ℔ lb.

**Candles**—Tallow, 2½; sperm, wax stearine and adamantine, cts ℔ lb.

**Coal**—Bituminous, 75 cts ℔ ton of 28 bushels, 80 lbs to the bushel; anthracite, free; other 40 cts ℔ 28 bushels of 80 lbs to the bushel

**Cordage**—Tarred, 3; untarred manilla, 2½; other, 2½ cts ℔ lb.

## GRAIN FLEET OF 1878--1879.

☞ The days out in the following Table are corrected only on Monday of each week.

| Sailed | | Flag. | Name. | Tns. | For. | Arrived | Centals | Value. | Shippers. | D'ys out. | Rate. | Final Des'natn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| July | 3 | Am Ship | South American | 1762 | Cork | Oct 10 | 54,984 | $96,222 | Dresbach & Co | 100 | £2 10s | Havre |
| | 12 | Br bark | River Leven‡ | 806 | Cork | | 25,821 | 45,000 | Starr & Co | 164 | £3 | |
| | 13 | Br ship | Kirkwood‡ | 1324 | Cork | Nov 25 | 39,633 | 67,400 | Dresbach & Co | 134 | £2 15s | |
| | 16 | Am ship | St David | 1596 | Liverpool | Nov 10 | A 27,899 | 46,000 | G W McNear | 117 | £2 10s | Liverpool |
| | 22 | Am ship | Bonanza | 1356 | Cork | Nov 23 | 40,000 | 68,000 | Falkner Bell & Co | 124 | £2 12s 6d | Liverpool |
| | 24 | Br Ship | BritishCommodore | 1453 | Cork | | 44,524 | 75,690 | Rodgers, Meyer &Co | 161 | £2 15s | |
| | 30 | Br Bark | Mabel Young‡ | 950 | Cork | Nov 24 | 32,307 | 53,750 | Dickson, DeWolf &Co | 116 | owners' acct | Liverpool |
| | 30 | Br Ship | Dallam Tower‡ | 1493 | Liverpool | Nov 23 | B 23,183 | 37,093 | Starr & Co | 115 | £2 15s | Liverpool |

July—China, Japan, Australia, Mexico Central & S America etc.. C 136 230

Total—Wheat, 288,497 ctls, value $399,385; Barley, 3450 ctls, value $3503; Four, 81,377, value $161,456.

A—And 200 bbls flour value $1000. B—And 9800 bbls flour, value $50,000. C—And 3450 ctls barley, value $3503; and 20,2.7 bbls flour, value $104,416.

| Sailed | | Flag. | Name. | Tns. | For. | Arrived | Centals | Value. | Shippers. | D'ys out. | Rate. | Final Des'natn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aug | 1 | Br ship | New York‡ | 2794 | Liverpool | | 62,221 | $107,144 | Dickson, DeWolf & Co | 144 | owners' acct | |
| | 1 | Am ship | Jabez Howes | 1648 | Liverpool | Nov 25 | 29,653 | 49,424 | Parrott & Co | 116 | £2 10s | Liverpool |
| | 2 | Br bark | Glencoe‡ | 747 | Cork | | 23,718 | 40,320 | Rogers, Meyer & Co | 143 | £3 | |
| | 3 | Br ship | Cherwell‡ | 1170 | Li'l'MgBy | | 20,020 | 34,050 | Rodgers, Meyer & Co | 142 | owners' acct | |
| | 3 | Br bark | Æthelstan‡ | 771 | Cork | | 26,258 | 44,638 | Balfour, Guthrie&Co. | 142 | £3 | |
| | 5 | Br Bark | Shakespeare‡ | 791 | Cork | | 26,603 | 45,332 | Starr & Co | 139 | £3 | |
| | 5 | Am Ship | Gov Goodwin | 1459 | Cork | Dec 13 | 42,250 | 71,300 | Falkner, Bell & Co | 130 | £2 12s 6d | Dublin |
| | 6 | Br Bark | E P Bouverie | 941 | Liverpool | | 28,291 | 48,094 | Dresbach & Co | 138 | £2 15s | |
| | 6 | Br Bark | Newark‡ | 1004 | Cork | Dec 18 | 32,421 | 51,115 | Wilkens & Co | 134 | £3 | |
| | 7 | Am Ship | St Paul | 1893 | Liverpool | Dec 3 | D 49,897 | 84,825 | Balfour, Guth & Co. | 117 | £2 10s | Liverpool |
| | 8 | Br Ship | Rajah‡ | 1258 | Cork | | 39,005 | 61,000 | G W McNear | 137 | £2 10s | |
| | 10 | Br Ship | Raven-crag‡ | 1263 | Cork | | 38,548 | 64,130 | Dickson, DeWolf &Co | 135 | £3 | |
| | 10 | Br Bark | Alneburg‡ | 818 | Cork | | 27,298 | 46,600 | Rodgers, Meyer & Co | 135 | £3 | |
| | 10 | Br Bark | Lanarkshire‡ | 794 | Cork | | 28,040 | 47,688 | Geo J Theobald & Co | 135 | £3 | |
| | 10 | Haw bark | Iolani | 860 | Cork | | 26,166 | 44,483 | Ammon, Caspari & Co | 136 | £2 17s 6d | |
| | 12 | Br Bark | Abbey Town‡ | 702 | Cork | | 23,474 | 40,493 | Starr & Co | 133 | £3 6s | |
| | 12 | Br Bark | Lindores Abbey‡ | 863 | Liverpool | | 20,031 | 34,053 | Ammon, Caspari & Co | 133 | £2 5s | |
| | 13 | Br Ship | Peterborough‡ | 1680 | Havre | | 52,985 | 89,089 | Dickson DeW & Co | 132 | £2 15s | |
| | 15 | Br ship | Angerona‡ | 1215 | Cork | Dec 20 | 39,904 | 71,990 | Dresbach & Co | 130 | £3 | |
| | 15 | Br bark | Loch Doon‡ | .86 | Cork | | 25,578 | 43,600 | Degener & Co. | 127 | £3 | |
| | 15 | Br bark | Isle of Bute‡ | 929 | London | | 17,982 | 28,667 | Parrott & Co | 130 | £2 7s 6d | |
| | 15 | Am Ship | Mystic Belle | 765 | Callao | Oct 18 | E 3,966 | 6,491 | J W Grace & Co | 64 | $6,000 | Callao |
| | 17 | Br Ship | Lottie Warren | 1184 | Cork | | 33,344 | 56,700 | Rodgers, Meyer & Co | 125 | owners' acct | |
| | 17 | Br Ship | Lochee‡ | 1728 | Liverpool | | 54,098 | 94,000 | G W McNear | 128 | £2 15s | |
| | 17 | Br Ship | City of Florence‡ | 1200 | Cork | | 37,500 | 65,626 | Dresbach & Co | 129 | £3 | |
| | 17 | Br Ship | Harwarden Castle‡ | 1101 | Cork | | 34,638 | 57,000 | G W McNear | 128 | £3 | |
| | 17 | Br bark | Earl Derby‡ | 961 | Cork | | 31,724 | 58,000 | Balfour, Guthrie & Co | 128 | £3 | |
| | 17 | Br Ship | Cape Clear‡ | 880 | Cork | | 26,904 | 45,800 | Rodgers, Meyer & Co | 128 | £2 10s | |
| | 20 | Br Ship | Langdale‡ | 1237 | Cork | Dec 12 | 39,809 | 70,660 | Balfour, Guthrie&Co | 114 | £2 7s 6d | |
| | 21 | Br bark | Cordillera‡ | 852 | Cork | | 27,432 | 44,629 | Rodgers, Meyer & Co | 124 | £2 12s6d | |
| | 21 | Br bark | Loch Cree‡ | 791 | Cork | | 26,119 | 43,780 | Parrott & Co | 124 | £3 | |
| | 22 | Fr bark | Valentine | 642 | Falmouth | | 22,932 | 38,411 | A E Sabatie & Co | 123 | Owners' acct | |
| | 23 | Ger Bark | Elisabeth | 1169 | Liverpool | Dec 12 | 31,709 | 55,596 | Ammon, Caspari & Co | 112 | £2 15s | Liverpool |
| | 26 | Am ship | Red Cross | 1301 | Cork | | 30,209 | 70,576 | Dresbach & Co | 119 | £2 16s | |
| | 26 | Am ship | John W Marr | 1296 | Cork | | 39,985 | 69,900 | Rodgers, Meyer & Co | 119 | £2 5s | |
| | 27 | Br ship | Grisedale‡ | 1285 | Cork | | 40,110 | 71,195 | Balfour, Guth &Co | 118 | £2 7s 6d | |
| | 28 | Ger ship | Regulus‡ | 1115 | Cork | | 34,526 | 72,146 | Ammon, Caspari & Co | 117 | £2 17s 6d | |
| | 28 | Br ship | Bremen‡ | 2794 | Liverpool | | 64,683 | 103,020 | Dickson, DeWolf & Co | 117 | owners' acct | |
| | 28 | Br ship | Mid Lothian‡ | 1085 | Cork | | 32,492 | 50,526 | Parrott & Co | 117 | £3 | |
| | 28 | Am ship | Charger | 1448 | Cork | | 49,954 | 80,000 | Falkner, Bell & Co. | 117 | £2 5s | |
| | 30 | Br bark | Snowdon‡ | 1065 | Cork | | 36,461 | 63,800 | Rodgers, Meyer & Co | 116 | £3 | |
| | 30 | Br bark | Stuart‡ | 851 | Cork | | 28,599 | 50,000 | Starr & Co | 115 | £3 | |
| | 31 | Br Ship | Ettrickdale‡ | 1259 | Cork | | 43,306 | 75,786 | Ammon, Caspari & Co | 114 | £2 15s | |
| | 31 | Br Ship | British Nation‡ | 1302 | Cork | | 40,708 | 69,596 | Dickson DeWolf & Co | 114 | Owners' acct | |
| | 31 | Br ship | Evelyn‡ | 1179 | Cork | | 34,515 | 63,000 | Balfour, Guthrie & Co | 114 | £3 | |
| | 31 | Fr bark | Concordia‡ | 466 | Iquiqui | | F 15,085 | 16,675 | Muecke, Vietor & Co | 114 | $3.50 | |

August—China, Japan, Australia, Central and South America, etc G 162 251

Total—Wheat, 1,535,558 ctls, value $2,624,430; Barley, 40,165 ctls, value $68,027; Four, 52,802 bbls, value $278,430.

D—And 10 bbls flour, value $70 E—1000 bbls flour, value $6000; and 3821 ctls barley, value $4849. F—Barley. G—And 21,269 ctls barley, value $36,503; 51,792 bbls flour, value $273,410

| Sailed | | Flag. | Name. | Tns. | For. | Arrived | Centals | Value. | Shippers. | D'ys out. | Rate. | Final Des'natn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sept | 1 | Fr bark | Maitre Pierre | 137 | Iquiqui | | H 2,752 | $3,131 | Mueke, Vietor & Co. | 113 | Owners' acct | |
| | 2 | Am Ship | William G Davis | 1668 | Havre | | 48,439 | 87,000 | G W McNear | 112 | £2 1s 3d | |
| | 2 | Br bark | Serena‡ | 510 | Callao | Nov 12 | 15,553 | 31,135 | Parrott & Co | 71 | $6 | Callao |
| | 3 | Am bark | Fresno | 1245 | Cork | | 38,931 | 71,050 | Pope & Talbot | 111 | Owners' acct | |
| | 4 | Br Ship | British Army | 1388 | Havre | | 41,638 | 72,900 | Rodgers, Meyer & Co | 110 | £2 17s6d | |
| | 5 | Fr ship | Garonne | 863 | Falmouth | | 28,910 | 50,250 | A E Sabatie & Co | 109 | Owners' acct | |
| | 5 | Br Ship | Eskdale‡ | 1220 | Cork | | 39,551 | 69,212 | Balfour, Guthrie & Co | 109 | £2 7s 6d | |
| | 5 | Br Ship | Alexander Yeats | 1586 | Cork | | 50,583 | 88,600 | Dresbach & Co | 109 | £2 12s6d | |
| | 5 | Br Ship | Coroila‡ | 1264 | Cork | | 39,799 | 69,962 | N Ten Bosch & Co | 109 | £3 | |
| | 5 | Am Ship | Thos M Reed | 1500 | Liverpool | | I 21,938 | 39,294 | Parrott & Co | 109 | £2 | |
| | 5 | Br Ship | Thos Bell‡ | 838 | Cork | | 27,324 | 47,166 | Parrott & Co | 109 | £2 12s6d | |
| | 6 | Am Ship | St Mark | 1973 | Liverpool | | 61,384 | 107,418 | Balfour, Guthrie & Co | 108 | £2 | |
| | 6 | Am Ship | Alameda | 1474 | Liverpool | | II 33,541 | 60,000 | G W McNear | 108 | £2 | |
| | 7 | Br bark | Ocean Rover | 548 | Falmouth | | 18,097 | 32,031 | Balfour, Guthrie& Co | 108 | £2 5s | |
| | 8 | Am Ship | Armenia | 1609 | Havre | | 51,280 | 92,300 | Dresbach & Co | 106 | £2 | |
| | 8 | Br Ship | Ambrose‡ | 862 | Havre | | 23,275 | 40,731 | Ammon, Caspari & Co | 106 | £2 6s 0d | |
| | 9 | Am Ship | Great Admiral | 1574 | Havre | | 45,072 | 84,000 | G W McNear | 105 | £2 | |
| | 10 | Am Ship | M P Grace | 1928 | New York | | J 18,284 | 21,026 | Geo Howes & Co | 104 | $20,000 | |
| | 10 | Br Ship | Deveron‡ | 1256 | Cork | | 33,296 | 65,270 | Dresbach & Co | 104 | £3 | |
| | 10 | Am Ship | Ringleader | 1183 | Cork | | 33,710 | 60,330 | Falkner, Bell & Co | 104 | £2 10s | |
| | 10 | Am Ship | Sintram | 1600 | Havre | | 49,002 | 68,202 | Dresbach & Co | 104 | £2 | |
| | 10 | Br Ship | Eulomene‡ | 1625 | Liverpool | | K 36,239 | 61,605 | Starr & Co | 104 | £2 15s | |
| | 11 | Br ship | Prince Frederick | 1485 | Liverpool | | 49,697 | 87,000 | Rodgers, Meyer & Co | 103 | £2 10s | |
| | 12 | Br bark | Naworth | 350 | Dunkirk | | 11,003 | 19,254 | Ammon, Caspari &Co | 101 | £2 7s 6d | |
| | 13 | Br Ship | Thurland Castle‡ | 1301 | Cork | | 42,336 | 73,089 | Dresbach & Co | 101 | £3 | |
| | 15 | Br Ship | Lammermoor‡ | 1626 | Liverpool | | 51,167 | 9,600 | Rodgers, Meyer & Co. | 99 | £2 15s | |
| | 17 | Br Ship | Vellore‡ | 1631 | Cork | | 52,497 | 90,246 | Dresbach & Co | 97 | £3 | |
| | 17 | Br bark | Dunkeld‡ | 1005 | Cork | | 32,967 | 56,044 | Starr & Co | 97 | £3 | |
| | 18 | Br Ship | Roxellana | 1498 | Liverpool | | 25,847 | 44,500 | Rodgers, Meyer & Co | 96 | £2 10s | |
| | 18 | Br Bark | Egremont Castle‡ | 814 | Cork | | 27,285 | 47,747 | Ammon, Caspari & Co | 96 | £2 8s | |
| | 18 | Ger ship | Gutenberg‡ | 710 | Cork | | 22,192 | 39,362 | Forbes Bros | 96 | L £3 15s | |
| | 19 | Am Ship | Adam M Simpson | 1525 | Cork | | 45,499 | 73,965 | Falkner, Bell & Co | 96 | £2 2s 6d | |
| | 19 | Br Ship | Gryfe‡ | 1069 | Cork | | 33,645 | 57,741 | Dickson, DeWolf &Co | 95 | £3 | |
| | 19 | Br Ship | The Bruce‡ | 1146 | Cork | | 36,327 | 62,700 | Rodgers, Meyer & Co | 95 | £3 | |
| | 19 | Ger Bark | Lesmona‡ | 1100 | Cork | | 34,979 | 62,946 | Dresbach & Co | 95 | £2 5s | |
| | 20 | Br bark | Ironcrag‡ | 827 | Cork | | 27,814 | 50,182 | Parrott & Co | 94 | £3 | |
| | 20 | Br bark | Harmodius‡ | 491 | Havre | | 14,447 | 25,283 | Dresbach & Co | 94 | £2 4s | |
| | 20 | Fr bark | Louise Marie | 334 | Cape Twn. | | 10,108 | 17,680 | Muecke, Vietor & Co | 94 | £2 7s 6d | |
| | 21 | Br Ship | City of Benares‡ | 1157 | Cork | | 37,980 | 63,866 | Dickson, DeWolf &Co | 93 | £3 | |
| | 21 | Am bark | Sarah | 661 | Callao | | 20,864 | 57,034 | Balfour, Guthrie&Co. | 93 | $5 | |
| | 22 | Br Ship | Aberaman‡ | 1090 | Cork | | 36,038 | 62,166 | Dresbach & Co | 92 | £3 | |

## BANKS AND BANKERS.

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The undersigned having been appointed Agent here for the **Westbrook Manufacturing Company**, of Portland, Maine, offers to the Trade their manufactures, consisting of

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Their product is well known as equal to any and excelled by none.

**A. CHESEBROUGH.**
sep3 **24 California St.**

Reproduction of part of a page from the Daily Commercial News of San Francisco for December 24, 1878. The names of shippers, consignees and advertisers will be of much interest to many old San Franciscans and to other readers of Pacific Marine Review

The bark Letterewe off San Francisco November, 1878, from Sydney. The Letterewe was 191 feet long by 33 feet beam; registered 798 tons, and was a very handsome bark.

ually discharge is completed and the ship laid on for China. If she can get many returning Chinese, the captain will be pleased, for his perquisite may be 50 per cent of the passage money. It is of record that a Chinese merchant paid $600 gold for a stateroom on the Golden Fleece, hence to Hongkong. Possibly our ship will have caskets containing the remains of deceased Chinese, to the number of over fifty, which was not an uncommon incident and it used to be said that some skippers billed these bodies as passengers instead of cargo and even carried some in their cabin, that they might get their proper percentage of ship's earnings. However, with a good tea cargo from Shanghai or Foo Chow to England or home, our captain will find that he has managed to save some $1200 or $1500 on the ten-month voyage and so everything goes on favorably until he meets with some disaster or finds that another captain has bought a sixteenth interest in the ship and takes over the command. If our friend has accumulated enough to retire on or to purchase into another vessel, all well and good, but otherwise he will probably regret the day he first went to sea. Such are the ups and downs of a sailor's life.

Glory of the Seas. This handsome American ship was the last of Donald McKay's clippers. She was built at East Boston; she registered 2009 tons; and was in the San Francisco trade for many years. She holds the record from this port to Australia, 35 days 11 hours, anchor at San Francisco to anchor at Sydney; distance sailed 7026 knots. In the winter of 1873-74, according to her log, she made the New York-San Francisco run, anchor to anchor, in 96 days. She is now owned in Seattle and in use as a barge in connection with salmon canning.

As to the profits of ship-owners, it is said that the principal fortunes amassed in New England up to the time of the Civil War were made through shipping. An instance of what could be done by a first-class ship in good hands is the case of the old favorite David Crockett. This vessel, of which it was said that for thirty years she had not cost underwriters one dollar, was launched in October, 1853, at a cost of $96,000. On a round voyage of nine months, 1872-73, she netted $37,000 and her total net earnings as measured by actual cash dividends up to December, 1875, were $443,000. As her first appearance at San Francisco was in 1857, she did not participate in the phenomenal earnings of the earliest clippers, which on a portion of the cargo of the Celestial from New York in 1850 was $3.50 per cubic foot, or of the Wild Pigeon in 1851, which received $6.50 and primage per barrel of flour. Between 1860 and 1905 the highest rate paid for a grain cargo hence to Liverpool direct, was 113 shillings, in 1872; the lowest, 10 shillings 6 pence, in 1903 and 1904. When it is taken into consideration that European owners, particularly German, paid their captains not over $25 and 2½ per cent of gross earnings; their seamen $10 to $15, and that the average

errata - THOMAS STEPHENS (MAY
P 3

The ship Thomas Stevens, 1469 tons; 263 feet long by 38 feet beam, afterwards the Portuguese ship Pero d'Alemguer and posted as missing on a voyage from New York to Lisbon, January, 1916. She was built in 1869 at Liverpool and was always a fast and consistent sailer.

The St. Stephen, a typical American 3-skysail yarder, of 1392 tons; built at Bath, Maine, 1877; average of seven trips to San Francisco from Atlantic Coast ports 130 days and best time 113 days from Philadelphia; average of five return trips 113 days, best 101 days to Liverpool. Foundered off Cape Flattery April 1887, with all hands.

The American iron bark Annie Johnson, formerly British ship Ada Iredale; built in England in 1872. On October 13, 1876, while on a voyage to San Francisco, she was abandoned by the crew with her cargo on fire. She drifted around the South Pacific until June 9, 1877, was picked up and towed into Tahiti. The cargo of coal was still afire and nothing left of the vessel but the bare hull. She was bought by Andrew Crawford, rebuilt as a bark, run in the grain trade for some years, and sold to Matson Navigation Company, since running in Hawaiian Island trade both as a bark and as an auxiliary schooner. In 1903 she made a run as a bark from Fort Point to Diamond Head, 2155 miles by log, in 8 days, 18 hours, or 264.47 miles per day.

food cost was not over $10 per man, it may readily be seen that with an inward freight of 8 shillings only, the operation of these vessels was highly remunerative.

### Ships of a Later Day

American ships latterly were only enabled to operate because the run between domestic Pacific ports and domestic Atlantic ports is by law a coastwise voyage, and during the early 90's we had about three monthly sailings from New York and an occasional one from Philadelphia. A few of the fine ships which continued were the Henry B. Hyde, Alfred G. Ropes, Florence, Tacoma, St. Paul, Charles Dennis. They had good lines, carried three times the proportionate cargo of the clippers and generally made passage within 12 to 15 days of the average of the flyers. With a return grain freight to Europe, they managed to make both ends meet and with an occasional advance of $1 per ton on the outward freight and 5 shillings on the return grain cargo, there was a little left for the sinking fund. Wooden ships did not figure in the grain trade after the season of 1896-97.

### California Grain Trade

It is interesting to note that in 1860 we exported 1088 tons wheat and 58,926 barrels flour; in 1870 the figures were 243,199 tons and 352,969 barrels. The apex was reached in 1882, 1,128,031 tons wheat and 919,898 barrels flour. The vessels getting the high rates of 1872 were: American ship Agenor, 1487 tons, 113 shillings to Liverpool; British ship William Melhuish, 681 tons, 115 shillings to Southampton for orders; French bark Henri Joseph, 305 tons, and Hawaiian bark R. C. Wylie, 472 tons, both to Cork for orders, at 116 and 115 shillings respectively.

That a shipmaster had at times other matters to attend to than to show a favorable balance sheet to his owners at the end of a voyage will appear from the following incidents, the facts being matters of history:

### Voyage of the Ship Templar

On September 14, 1878, the American ship Templar, Captain Armstrong, set sail from New York for San Francisco, via Cape Horn. On the 22nd, in a heavy gale, she shipped seas, stove bulwarks, broke bow stanchions, knight-heads and timbers and flooded cabin, damaging furniture, piano, stores, etc. On October 17, in a heavy hurricane, twisted off the rudderhead, strained ship and sprung a bad leak. Bore up for Rio. Crossed the line 67 days out from New York. Arrived at Rio December 8. Discharged all cargo, repaired damages, reloaded and sailed for San Francisco February 20, 1879.

While in port at Rio, nine seamen died of yellow fever and Captain Armstrong was very sick for a time, but it was thought that the disease had died out. However, on the day after leaving Rio, the fever again broke out, the captain, his wife and daughter being attacked. The next day nine of the crew were down and within a week Mrs. Armstrong and two of the crew died and were buried at sea; the captain, his daughter, the carpenter and several of the seamen still very sick. On March 4 the ship was kept off her course and headed for Montevideo, contrary to the

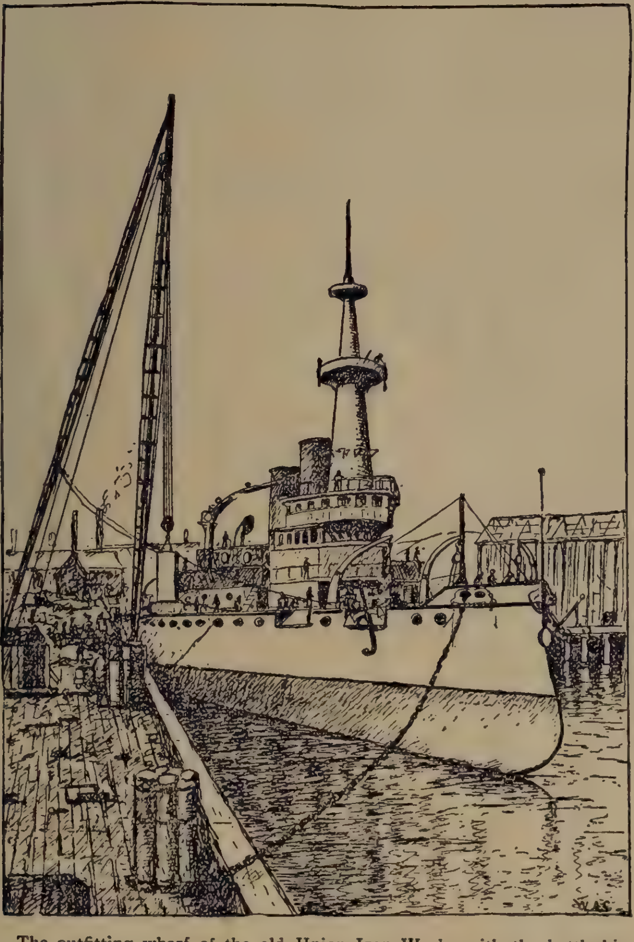
A wintry afternoon on San Francisco Bay in the late '90s captain's orders. Four days later, the captain getting somewhat better, succeeded in getting the ship put on her course for San Francisco. On March 26 they crossed 50 south, in the Atlantic and were 25 days rounding the Horn, mostly in very heavy weather. An iron water-tank leaked out, 2800 gallons fresh water being lost, leaving but 1200 on board. May 18 the carpenter and two sick seamen resumed duty, the captain and daughter still ill but getting better. Crossed the line in the Pacific June 2. On June 24 William Spelling, the first mate, was discovered overboard. A boat was put out but was stove and filled with water, though finally succeeded in recovering the lifeless body. On July 30 the ship arrived on soundings and finally anchored in San Francisco Bay after a voyage of 319 days from New York, of which 245 days were actually spent at sea.

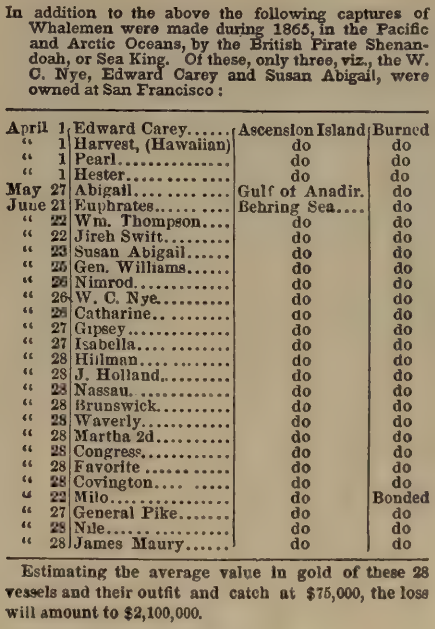
### Real Seamanship

In conclusion we cannot do better than quote from the book of recollections by Captain Charles P. Low his description of an entrance to San Francisco harbor in the clipper ship N. B. Palmer, during which entrance he brought the ship under full sail right alongside the dock without the assistance of tug or pilot, a most unusual feat of seamanship even for those grand old days of the sail:

"We crossed the line in the Pacific in eighty-eight days and on the twenty-first of August entered San Francisco Bay, one hundred and seven days from New York, two days' shorter time than my passage in the Samuel Russell. The pilot came to an anchor some three miles from the wharf, refusing to take the ship any further till next day. I had my boat lowered and manned, and rowed to the city, where I met Mr. Sanford, the agent for A. A. Low & Brothers. He was a regular driver, a Nantucket man, and he wanted to know why I had not brought the ship up near the wharf. I told him, 'The pilot refused to bring her any nearer,' and he said, 'The ship must come up to the wharf,' and I said, 'If she must come up, she must,' and having found the wharf we were to tie up to, I went back on board and told the pilot, 'The ship **must** go to the wharf at once.' He said he would not take her. I told him then that I would, and I ordered up all hands and set all the sails, skysail and all. There was an ebb tide, and the wind light abeam and I knew I could take the ship right alongside of the wharf. We got under weigh and went along finely. I knew that sails would stop a ship, as well as send her ahead, and I kept every stitch of canvas on her, so that if I missed the wharf I could still keep command of her and try again, but there was no occasion, for as soon as I got near enough I backed the main-yard and went alongside the wharf so easily that there was hardly a jar. The steamer Senator was lying alongside of the next wharf and my flying jib-boom just lifted two of her planks off the wheel box. A great crowd on the wharf cheered me most heartily. Mr. Sanford cried out, 'Well done!' As soon as we were made fast I took in the sails and furled them."

A busy San Francisco wharf scene about 1880


The outfitting wharf of the old Union Iron Works with the battleship Oregon alongside as sketched by W. A. Coulter for the San Francisco Call in the late '90s.


In addition to the above the following captures of Whalemen were made during 1865, in the Pacific and Arctic Oceans, by the British Pirate Shenandoah, or Sea King. Of these, only three, viz., the W. C. Nye, Edward Carey and Susan Abigail, were owned at San Francisco :

| | | | |
|---|---|---|---|
| April 1 | Edward Carey...... | Ascension Island | Burned |
| " 1 | Harvest, (Hawaiian) | do | do |
| " 1 | Pearl.............. | do | do |
| " 1 | Hester............ | do | do |
| May 27 | Abigail........... | Gulf of Anadir. | do |
| June 21 | Euphrates......... | Behring Sea.... | do |
| " 22 | Wm. Thompson.... | do | do |
| " 22 | Jireh Swift......... | do | do |
| " 23 | Susan Abigail...... | do | do |
| " 25 | Gen. Williams...... | do | do |
| " 26 | Nimrod............ | do | do |
| " 26 | W. C. Nye.......... | do | do |
| " 28 | Catharine.......... | do | do |
| " 27 | Gipsey............. | do | do |
| " 27 | Isabella........... | do | do |
| " 28 | Hillman............ | do | do |
| " 28 | J. Holland.......... | do | do |
| " 28 | Nassau............. | do | do |
| " 28 | Brunswick.......... | do | do |
| " 28 | Waverly............ | do | do |
| " 28 | Martha 2d.......... | do | do |
| " 28 | Congress........... | do | do |
| " 28 | Favorite .......... | do | do |
| " 28 | Covington.... ..... | do | do |
| " 22 | Milo............... | do | Bonded |
| " 27 | General Pike....... | do | do |
| " 28 | Nile............... | do | do |
| " 28 | James Maury...... | do | do |

Estimating the average value in gold of these 28 vessels and their outfit and catch at $75,000, the loss will amount to $2,100,000.

"Pirates" on the Pacific

# A PACIFIC COAST SHIPPING DIRECTORY

**In the January, 1921, issue of Pacific Marine Review appeared a directory of companies operating vessels under the United States flag to and from the Pacific Coast. The experiment of compiling such a list having succeeded unexpectedly well, a decision was made to extend the subject matter this year to include foreign-flag vessels as well as those of American registry; the directory, thus enlarged, is submitted to the shipping public. An earnest effort has been made to list all companies operating deep-water vessels, steam, motor and sail, in offshore, intercoastal or coastwise trades; but data could not be obtained from all firms. Considerably more than 90 per cent, however, are represented, and few important common carriers, if any, have been omitted. Although great care has been exercised to avoid errors, some doubtless have crept in, and the editors would be grateful if those who discover errors would advise them as soon as possible. No attempt has been made, it should be said, to keep abreast of recent sales and purchases of vessels, changes in Shipping Board allocations, etc.**

**Alaska Codfish Company, 15 Steuart Street, San Francisco.** United States flag.

Operating the following privately-owned vessels, San Francisco to Sydney, Australia: schrs. Bangor, 511 gross, 165 long; S. N. Castle, 515 gross, 156 long; San Francisco to Unga, Alaska, and codfishing banks in Behring Sea: schrs. Glendale, 296 gross, 43 long; Maweema, 454 gross, 156 long; City of Papeete, 390 gross, 146 long.

* * *

**Alaska Salmon Company, 141 Clay Street, San Francisco.** United States flag.

Officials: President, C. P. Hale; vice-president, M. Fleishhacker; treasurer, C. E. Cocks; secretary, C. I. Sturrock.

Operating the following privately owned vessels, San Francisco to Alaska once a year; bark Whitney, 1318 gross, 193 long; gas s. Frank & Lena, 35 gross, 51 long, 8 speed; gas schr. Twilight, 33 gross, 51 long, 7 speed.

* * *

**Alaska Steamship Company, Pier 2, Seattle.** United States flag.

Officials: President, Stephen Birch, New York; vice-president, E. T. Stannard; operating manager, E. T. Stannard; marine superintendent, R. R. Pierson.

Operating the following privately-owned vessels, Seattle to Alaska: strs. Alameda, combn., 3158 gross, 332 long, 16 speed; Jefferson, combn., 1615 gross, 207 long, 12 speed; Juneau, frt., 2382 gross, 244 long, 9 speed; Ketchikan, frt., 2373 gross, 237 long, 8½ speed; Latouche, frt., 2332 gross, 240 long, 10 speed; Northwestern, combn., 3496 gross, 342 long, 12½ speed; Redondo, combn., 1130 gross, 188 long, 10 speed; Santa Ana, combn., 1203 gross, 182 long, 8 speed; Skagway, frt., 1838 gross, 240 long, 10 speed; Valdez, frt., 2308 gross, 244 long, 9 speed; Victoria, combn., 3502 gross, 361 long, 12 speed. Seattle to Honolulu, str. Cordova, combn., 2273 gross, 243 long, 12 speed. Intercoastal: motorship Kennecott, 3620 gross, 360 long, 11 speed.

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**Albion Lumber Co., 65 Market street, San Francisco.** United States flag.

Agency: 582 Market street, San Francisco.

Officials: president, deceased, successor not named; vice-president, L. H. Long; operating manager, Paul M. Dimmick.

Operating the following privately-owned vessel, San Francisco to Albion, about five days: str. Pasadena, 300 gross, 141 long, 8 speed.

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**American-Hawaiian Steamship Co.;** see United American Lines.

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**Associated Oil Company, Sharon building, San Francisco.** United States flag.

Officials: president, Paul Shoup; vice-president, A. C. McLaughlin; assistant general manager, F. B. Henderson; manager transportation, G. D. Zeh; port engineer, O. Lundin.

Operating the following privately-owned vessels, United States, coastwise: steam tankers Frank G. Drum, 7048 gross, 435 long, 11 speed; Frank H. Buck, 6076 gross, 410 long, 10 speed; Wm. F. Herrin, 4939 gross, 384 long, 10 speed; W. S. Porter, 4902 gross, 385 long, 10 speed.

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**Atlantic-Gulf & Pacific Steamship Corporation, 406 Water street, Baltimore.** United States flag.

Agencies: Seattle, F. C. Devine, 1407-08 L. C. Smith building; Portland, H. T. Anning, 601 Title & Trust building; San Francisco, Charles Gay, 60 California street; Los Angeles, G. W. Blake, 427 Van Nuys building.

Officials: president, W. Bernard Duke; vice-president and general manager, C. A. Askew; marine superintendent, Alfred H. Haag; port engineer, M. W. Brown; assistant general manager, C. R. Bradley.

Operating the following privately-owned vessels, intercoastal, New York, Philadelphia, Baltimore, Norfolk, Savannah, Jacksonville, Los Angeles, San Francisco, Portland, Seattle, Tacoma, fortnightly sailings: Henry S. Grove, 6620 gross, 420 long, 13½ speed; Liberator, 7951 gross, 425 long, 12½ speed; Cape Henry, 4992 gross, 392 long, 10½ speed; Cape Romain, 4814 gross, 392 long, 10½ speed; West Haven, 5700 gross, 424 long, 10 speed; Chas. H. Cramp, 6620 gross 420 long, 13½ speed.

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**Atlas Steamship Company, San Francisco.** United States flag.

Agencies: Seattle, Tacoma, Portland and Los Angeles: Albers Bros. Milling Co.

Officials: president M. Thomsen; vice-president, E. A. Deming; operating manager, A. Humburg.

Operating the following privately-owned vessels, San Francisco to Puget Sound, every week: s. schrs., Rainier, frt., 1409 gross, 205 long, 10 speed; Northland, frt., 1387 gross, 195 long, 10 speed.

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**J. H. Baxter & Co., 702 American National Bank building, San Francisco.** United States flag.

Agencies: Vancouver, 613 Carter-Cotton building; Los Angeles, 1033 Central building; Everett, Wash., 1001 Hewitt avenue.

Officials: president, A. M. Baxter; vice-president, A. A. Baxter; marine superintendent, P. P. Sheridan; port engineer, P. P. Sheridan.

Operating the following privately-owned vessels, coastwise: s. schrs. Fred Baxter, 1294 gross, 225 long, 10 speed; Horace X. Baxter, 1293 gross, 225 long, 10 speed.

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**Geo. E. Billings, 312 California street, San Francisco.** United States flag.

Operating the following privately-owned vessels, in lumber trade principally; usual voyages to Australia, West Coast and South Africa; homeward voyages generally from South Sea Islands to Pacific Coast: sailers James Tuft, 1274 gross, 215 long; Geo. E. Billings, 1260 gross, 224 long; W. H. Talbot, 817 gross, 187 long; Wm. Bowden, 778 gross, 186 long. Under construction, to be used in coastwise and offshore lumber trade: s. schr. Viking (ex Thos. Rolph), 1269 gross, 215 long, 10 speed.

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**Blue Funnel Line (Ocean Steamship Company, Ltd., and China Mutual Steam Navigation Company, Ltd.—A. Holt & Company), India Building, Liverpool, England.** British flag.

Agencies, Vancouver, Dodwell & Company, Ltd., Yorkshire building; Seattle, Stuart building; Tacoma; Portland, Concord building; San Francisco, Oceanic building; Los Angeles, Union Oil Building. Butterfield & Swire, general agents for China and Japan, with offices in all principal ports.

Operating the following privately-owned frt. strs. Tacoma, Seattle, Vancouver, Victoria to Yokohama, Kobe, Hongkong, Manila, twenty-one-day sailings: Tyndareus, 11,347 gross, 507 long, 15-17 speed; Talthybius, 10224 gross, 506 long, 15-17 speed; Protesilaus, 9547 gross, 484 long, 15-17 speed; Ixion, 10,229 gross, 506 long, 15-17 speed.

Operating the following privately-owned vessels, San Francisco, Seattle, Tacoma, Victoria, Vancouver, Los Angeles (occasionally) to London, Liverpool, Glasgow, approximately monthly sailings: frt. strs. Memnon, 4870 gross, 392 long, 12 speed; Eurydamus, 5197 gross, 410 long, 12 speed; Eurylochus, 5723 gross, 430 long, 12 speed; Eurymachus, 4995 gross, 400 long, 12 speed; Myrmidon, 4965 gross, 391 long, 12 speed.

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**The Border Line Transportation Company, Seattle.** United States flag.

Agencies: Vancouver, Dodwell & Co., Ltd.; San Francisco, Dodwell & Co., Ltd.; Victoria, B. C., Dodwell & Co., Ltd.

Officials: president, K. J. Middleton; vice-president, C. H. Black; operating manager, J. S. Elliott.

Operating the following privately-owned vessel, Puget Sound to British Columbia, every six days: str. Fulton, 605 gross, 153 long, 8 speed.

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**Bowes & Andrews, 153 Steuart street, San Francisco.** United States flag.

Officials: E. C. Bowes and N. Andrews.

Operating the following privately-owned vessels, lumber, Pacific Coast ports only: strs. Hoquiam, 644 gross, 174 long, 8½ speed; Tahoe, 751 gross, 179 long, 8½ speed.

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**British Canadian Steamships, Limited, Credit Foncier building, Vancouver, B. C.** British flag.

Officials: president, John Coughlan; operating manager, A. L. Russell.

Operating privately-owned frt. strs. in tramp service as follows: Margaret Coughlan, 5703 gross, 427 long, 10 speed; City of Vancouver, 5765 gross, 427 long, 10 speed; City of Victoria, 6611 gross, 427 long, 10 speed.

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**Buehner Lumber Company, North Bend, Coos Bay, Oregon.** United States flag.

Agencies: Portland, 1508-9-10 Yeon building; San Francisco, 806 Newhall building; Los Angeles, 734 Central building.

Officials: president, Philip Buehner; vice-president, Henry P. Buehner; operating manager, Henry P. Buehner.

Operating the following privately-owned vessel, coastwise, every two weeks: s. schr. Martha Buehner, 774 gross, 193 long, 10 speed.

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**California & Oregon Lumber Co., Brookings, Oregon.** United States flag.

Agency: San Francisco, 2 Pine street.

Officials: president, James H. Owen; vice-president, Henry L. Stout; operating manager, James H. Owen; marine superintendent, Benj. Free.

Operating the following privately-owned vessels, Pacific Coast ports, every ten days, as a rule from Brookings to either San Francisco or San Pedro; at times during winter vessels are chartered for trips Columbia River to San Pedro: strs. F. D. Stout, combn., 1113 gross, 190 long, 10 speed; Necanicum, frt., 752 gross, 178 long, 8 speed.

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**California Sea Products Co., 235 Montgomery street, San Francisco.** United States flag.

Agencies: Moss Landing, Monterey Co., California; Trinidad, Humboldt Co., California.

Officials: president, Captain F. K. Dedrick; vice-presidents, D. B. Moody, Edw. Pringle, Captain John Erickson; operating manager, Capt. F. K. Dedrick; marine superintendent, Capt. F. K. Dedrick; secretary, Kirkham Wriget.

Operating the following privately-owned vessels, whaling, cruising in California waters: s. s. Traveler, 106 long, 10 speed; s. s. Hercules, 100 long, 10 speed; s. s. Port Saunders, 98 long, 12 speed; s. s. Hawk, 100 long, 10 speed.

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**Canadian-Australasian Steamship Line (Union Steamship Company of New Zealand), Dunedin, New Zealand.** British flag.

Agencies: Vancouver, 440 Seymour street; San Francisco, Canadian Pacific Railway and Hind, Rolph & Co.

Official: manager, James C. Irons, Vancouver.

Operating the following privately-owned vessels, Vancouver, Honolulu, Suva (Fiji Islands), Auckland (N. Z.), Sydney (Australia), every four weeks: strs. Niagara, combn., 13,500 gross, 543 long, 17 speed; Makura, combn., 8075 gross, 450 long, 16 speed. Route as cargo warrants, usual ports Vancouver, Ocean Falls, Powell River, San Francisco, Auckland, Wellington, Melbourne, Sydney, Adelaide: frt. strs. Waiotapu, 6035 gross, 450 long, 11 speed; Wairuna, 5832 gross, 420 long, 11 speed; Waitemata, 5728 gross, 399 long, 10 speed; Waikawa, 5677 gross, 400 long, 10½ speed; Waihemo, 5627 gross, 400 long, 10½ speed; Waihora, 4637 gross, 385 long, 10 speed. See also Union Steamship Company of New Zealand.

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**Canadian Government Merchant Marine, Limited, 230 St. James street, Montreal.** British flag.

Agencies: Vancouver, C. N. R. Station; Seattle, Dodwell & Co.; San Francisco, Dodwell & Co.; Sydney, Melbourne (Australia), Auckland and Christchurch (New Zealand), Canadian Government Merchant Marine, Ltd.; Hongkong, Shanghai, Butterfield & Swire; India, British India Steam Navigation Co.

Officials: president, D. B. Hanna; vice-president, A. J. Mitchell; operating manager, R. B. Teakle; marine superintendents, Captain E. E. Tedford; Vancouver, Captain W. B. Finglass; superintending engineer, I. J. Tait; port engineer, Vancouver, Thomas Louden; general agent, Vancouver, B. C. Keeley.

Operating the following government vessels, Vancouver to San Francisco and return, every 10 days: frt. strs. Canadian Farmer, 2410 gross, 251 long, 10 speed; Canadian Observer, 2410 gross, 251 long, 10 speed; Canadian Rover, 2422 gross, 251 long, 10 speed; Vancouver to Australia and New Zealand and return, every month: frt. strs. Canadian Transporter, 5700 gross, 410 long, 11½ speed; Canadian Importer, 5465 gross, 400 long, 11¾ speed; Canadian Freighter, 5700 gross, 410 long, 11½ speed; Canadian Skirmisher, 5500 gross, 400 long, 11¾ speed; Canadian Traveller, 5500 gross, 400 long, 11½ speed; Canadian Scottish, 5500 gross, 400 long, 11½ speed; Vancouver to Orient and return, joint service with Blue Funnel, monthly: frt. strs. Canadian Prospector, 5492 gross, 400 long, 11¾ speed; Canadian Highlander, 5500 gross, 400 long, 11¾ speed; Canadian Winner, 5500 gross 400 long, 11½ speed; Vancouver to India and return, every two months: frt. str. Canadian Inventor, 5497 gross, 400 long, 12 speed. Also bktn. S. F. Tolmie, 1612 gross, 238 long, under charter to Orient; also Canadian Britisher, 5490 gross, 400 long, 11¾ speed, under construction.

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**Canadian Pacific Railway Company (British Columbia Coast Steamship Service), Canadian Pacific Railway Docks, Victoria, B. C.** British flag.

Official: manager, J. W. Troup.

Operating the following privately-owned vessels, Seattle-Victoria-Vancouver, twice a day; Alaska, weekly in summer, 10-day in winter; Prince Rupert, biweekly: combn. strs. Princess Louise (now being completed), 4200 gross, 317 long; Princess Charlotte, 3844 gross, 330 long; Princess Victoria, 1943 gross, 300 long; Princess Adelaide, 3061 gross, 289 long; Princess Alice, 3099 gross, 289 long; Princess Mary, 2155 gross, 248 long; Princess Royal, 1996 gross, 228 long; Princess Beatrice, 1289 gross, 193 long; Princess Patricia, 1158 gross; 270 long; Princess Maquinna, 1777 gross, 232 long; Princess Ena, 1368 gross, 195 long; and various small craft in addition.

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**Canadian Pacific Steamships, Limited, Montreal.** British flag.

Agency: Vancouver, B. C., Canadian Pacific Railway building.

Officials: Chairman, G. M. Bosworth; secretary-treasurer, F. A. Gascoigne; manager, Captain J. B. Walsh, Montreal; general superintendent, Captain E. Beetham, Vancouver.

Operating the following privately-owned vessels, Vancouver to Hongkong: combn. strs. Empress of Asia, 16,909 gross, 570 long, 21 speed; Empress of Russia, 16,810 gross, 570 long, 21 speed; Empress of Japan, 5940 gross, 455 long, 17½ speed; Empress of China, 19,300 gross, 588 long, 17.6 speed; Monteagle, 6173 gross, 445 long, 13½ speed; frt. strs. Methven, 4852 gross, 390 long, 12 speed; Mattawa, 4874 gross, 401 long, 10½ speed. Under construction: combn. str. Empress of Canada, 22,500 gross, 653 long, 18½ speed.

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**W. R. Chamberlin & Co., 1200 Balfour building, San Francisco.** United States flag.

Agency: Los Angeles, 205 Union Oil building.

Officials: operating manager, W. R. Chamberlin; marine superintendent, E. A. Chamberlin; port engineer, T. L. Tomlinson.

Operating the following privately-owned vessels, used exclusively in company's own lumber business, Puget Sound and/or Columbia River to San Francisco, San Pedro, San Diego: s. schrs. Pacific, Phyllis, Stanwood, Davenport, Tiverton, Bertie M. Hanlon, Mary Hanlon.

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**China Mail Steamship Co., Ltd., 510 Montgomery street, San Francisco.** United States flag.

Agencies: Honolulu, Castle & Cooke, Ltd.; Yokohama, H. C. Brown; Nagasaki, Holme Ringer & Co.; Shanghai, F. R. Barrett; Kobe, Cornes & Co.; Hongkong, C. T. Surridge; Singapore, O. D. Martinez.

Officials: president, Chin Lain; vice-presidents, Lee Sing Hing and Yee Ling; operating manager, Lew Hing; general passenger agent, H. N. Thomas; general freight agent, W. K. Sempey; auditor, W. G. Anderson; secretary, M. Q. Fong; treasurer, Mark Thue.

Operating the following privately-owned vessels, San Francisco to Hongkong, every five weeks: combn. strs. Nanking, 8262 gross, 443 long, 16 speed; China, 5060 gross, 440 long, 14 speed; Hongkong to Singapore and Java, every four weeks, combn. str. Nile (British), 5888 gross, 420 long, 14 speed.

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**Cia. Naviera de Los Estados de Mexico S. A.;** see Mexican States Steamship Line.

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**Cia. Naviera Mexicana S. A.;** see Mexican Navigation Co., Inc.

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**Columbia Pacific Shipping Co., Board of Trade building, Portland.** United States flag.

Agencies: Astoria, Astoria Shipping Co.; Seattle, R. T. Johns & Co.; Grays Harbor, Grays Harbor Stevedoring Co.; San Francisco, Sudden & Christenson; Los Angeles, McCormick & McPherson; Oriental offices, Yokohama, Kobe, Hongkong, Shanghai, Tsingtau, Takubar, Chinwangtao, Dairen, Vladivostok.

Officials: president, J. C. Ainsworth; vice-president and general manager, K. D. Dawson; assistant general manager and operating manager, V. A. Cartwright; marine superintendent, E. G. Heinrici; port engineer, J. P. Byrne; traffic manager, W. T. Sexton; secretary-treasurer, S. P. Fleming.

Operating the following shipping Board vessels, Japan, every three weeks 2-dk. 3-island cargo strs.: West Nomentum, 5652 gross, 411 long, 10 speed; West Cayote, 5564 gross, 411 long, 10 speed; Las Vegas, 5403 gross, 411 long, 10 speed; Northern China, every three weeks: West Kader, 5751 gross, 411 long, 10 speed; Vinita, 5661 gross, 411 long, 10 speed; West Keats, 5661 gross, 411 long, 10 speed; Eastern Sailor, 6086 gross, 415 long, 10 speed.

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**Columbia River Packers' Association, Astoria.** United States flag.

Officials: president, A. B. Hammond; vice-president, F. H. Haradon; operating manager, Fred Barker.

Operating the following privately-owned vessels, in the fishing business, carrying supplies to Alaska and returning each year to Astoria; laid up during winter: ship St. Nicholas, ship Reuce, gas screw Patsy.

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**Commercial Pacific Cable Company, 253 Broadway, New York City.** United States flag.

Agency: San Francisco, C. P. C. Co., Battery and Bush streets.

Officials: president, Clarence H. Mackay; vice-president, Geo. G. Ward.

Operating the following privately-owned vessel, stationed at Charleston, Washington, to go out on repairs to cables in the Pacific Ocean whenever required: cable-repair str. Restorer, 3180 gross, 377 long, 15 speed; Honolulu to Midway, four times a year, aux. s. schr. Flaurence Ward, 266 gross, 127 long.

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**Compagnie Generale Transatlantique;** see Trans-Oceanic Company.

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**Congress Lines, Inc.;** see Great Gulf Steamship Company.

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**Consolidated Whaling Corporation, Ltd., 64 King street, East, Toronto.** British flag.

Officials: president, Wm. Schupp; vice-president, W. A. Lawson; operating manager, G. LeMarquand; port engineer, E. Scaplen.

Operating the following privately-owned vessels: whaling tender in Canadian waters; str. Gray, 707 gross, 183 long, 9½ speed; stm. whalers St. Lawrence, 111 gross, 93 long, 9 speed; Wm. Grant, 105 gross, 94 long, 12½ speed; Green, 102 gross, 92 long, 11 speed; Brown, 102 gross, 92 long, 11 speed; Black, 102 gross, 92 long, 11 speed; White, 102 gross, 92 long, 11 speed; Blue, 102 gross, 92 long, 11 speed; Orion, 102 gross, 92 long, 11 speed.

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**Coos Bay Lumber Company, 711 Syndicate building, Oakland.** United States flag.

Agency: Marshfield, Oregon.

Officials: president, C. R. Johnson, San Francisco; vice-president, F. A. Warner, Oakland, California; operating managers, Frederic T. Boles and William Denman, as receivers; marine superintendent, F. A. Warner.

Operating the following privately-owned vessels, Marshfield, Oregon, to Bay Point, California, every six days: lbr. schrs. C. A. Smith, 1754 gross, 257 long, 13 speed; Johanna Smith, 1670 gross, 257 long, 13 speed.

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**E. J. Dodge Company, 16 California street, San Francisco.** United States flag.

Agency: A. C. Nelson, 331 "E" street, Eureka, California.

Officials: president, Hubert E. Hunt; vice-president, Charles S. Dodge.

Operating the following privately-owned vessel, San Francisco to Eureka and San Pedro, every ten days: s. schr. Vanguard, 358 gross, 137 long, 9½ speed.

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**The Robert Dollar Company, 311 California street, San Francisco.** United States and British flags.

Agencies: Vancouver, 402 Pender street West; Seattle, L. C. Smith Building; Los Angeles, Pacific Electric building, C. J. Lehman, agent; Manila, Kobe, Singapore, Shanghai, Hongkong, Hankow, Tientsin, Peking, Canton, Ichang, Chungking.

Officials: president, Robert Dollar; vice-president, R. Stanley Dollar; operating manager, A. A. Moran; marine superintendent, E. B. Egbert; port engineer, E. B. Egbert; secretary, Hugo Lorber.

Operating the following privately-owned vessels, San Francisco to New York, every eight weeks: frt. str. Stanley Dollar, 3392 gross, 289 long, 11 speed. San Francisco to Orient and round the world, sailing out of San Francisco every thirty days: frt. strs. Robert Dollar, 10,893 gross, 523 long, 14 speed; M. S. Dollar, 9394 gross, 475 long, 13 speed; Esther Dollar, 7548 gross, 484 long, 13 speed; Grace Dollar, 6534 gross, 412 long, 13 speed. San Francisco to Orient, sailing out of San Francisco every thirty days: frt. strs. Bessie Dollar, 4329 gross, 370 long, 12 speed; Harold Dollar, 4377 gross, 377 long, 12 speed; Melville Dollar, 4304 gross, 370 long, 12 speed. Various routes: sailing ship William Dollar, 3239 gross, 330 long, 6 speed.

In addition, the company has laid up: at Mobile, Alabama, sailing ship John Ena; at Sausalito and Alameda, sailing ships Jane L. Stanford, Dunsyre, Hans, Adolph Vinnen, Orotava, Egon, Thielbek and Schurbek.

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**The East Asiatic Company, Ltd., Copenhagen, Denmark.** Danish flag.

Agencies: Vancouver, B. L. Johnson, Walton & Company; San Francisco, East Asiatic Company, Inc.; Los Angeles, Balfour, Guthrie & Company.

Official: operating manager, Chr. Jensen.

Operating the following privately-owned vessels, Pacific Coast to England, Germany, Holland and Scandinavia, every four weeks or more frequently: frt. M. S. Asia, 7014 gross, 426 long, 11 speed; Peru, 5584 gross, 426 long, 10 speed; Indien, 4199 gross, 390 long, 10½ speed; Siam, 5295 gross, 410 long, 11½ speed; Chile, 6950 gross, 426 long, 11 speed; frt. S. S. Kina, 4714 gross, 385 long, 11 speed; Arabien, 4714 gross, 385 long, 11 speed; M. S. Australien, 6576 gross, 410 long, 11¼ speed.

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**Ellerman's Wilson Line, Ltd., Hull, England.** British flag.

Agencies: Norton, Lilly & Company, general agents Pacific Coast; offices at ports as follows: all Norton, Lilly & Company: Seattle, Alaska building; Portland, Yeon building; San Francisco, American National Bank building; Los Angeles, Van Nuys building; San Diego, Spreckels building.

Operating the following privately-owned vessels, Pacific Coast ports, monthly sailings, to Hull, Leith, other East Coast of United Kingdom ports as cargo offers: Havre, Antwerp, Hamburg, Rotterdam, with transshipment to Ellerman's Wilson Line at Hull for Norway, Sweden, Denmark, Poland Free State, Esthonia, Portugal, Italy and the Levant, including Alexandria: frt. strs., all about 14 speed, City of Lincoln, 5861 gross, 422 long; City of Naples, 5739 gross, 418 long; City of Rangoon, 6635 gross, 443 long; and other vessels to be added.

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**E. C. Evans & Sons, Inc., 260 California street, San Francisco.** United States flag.

Officials: president, E. C. Evans, Jr.; vice-president, Harry L. Evans.

Operating the following privately-owned vessels (Isthmian Line), Pacific Coast to United Kingdom, once a month: frt. strs. Steelmaker, 6187 gross, 396 long, 13 speed; Steel Voyager, 6187 gross, 396 long, 13 speed; Steel Exporter, 5686 gross, 425 long, 13 speed; Steel Mariner, 5686 gross, 425 long, 13 speed; Steel Inventor, 5686 gross, 425 long, 13 speed; Steel Worker, 5686 gross, 425 long, 13 speed; Ensley City, 6187 gross, 396 long, 13 speed; Mobile City, 6187 gross, 396 long, 13 speed.

Operating the following Shipping Board vessels, tramping: frt. strs. Janelew, 6085 gross, 403 long, 10 speed; Namasket, 6085 gross, 403 long, 10 speed; Narbo, 6085 gross, 403, long, 10 speed.

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**Fife Shipping Company, 351 California street, San Francisco.** United States flag.

Agencies: Vancouver, Balfour, Guthrie & Company; Seattle, Balfour, Guthrie & Company; Tacoma, Balfour, Guthrie & Company; Portland, Balfour, Guthrie & Company; San Francisco, Balfour, Guthrie & Company; Los Angeles, Balfour, Guthrie & Company.

Officials: president, R. C. Reid; operating managers, Balfour, Guthrie & Company; marine superintendent, J. C. Fogarty; secretary, R. F. MacLeod.

Operating the following privately-owned vessels, general lumber trade: schr. Thistle, 1586 gross, 240 long; bktn. Monterey, 1854 gross, 260 long.

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**Forest Line, 911 Securities building, Seattle.** United States flag.

Agencies: Seattle, 911 Securities building; Aberdeen.

Official: president, A. Schubach.

Operating the following privately-owned vessels, Pacific Ocean: frt. str. Forest King, 2426 gross, 283 long, 11 speed; bktns. Forest Dream, 1605 gross, 260 long; Forest Pride, 1605 gross, 260 long; Forest Friend, 1605 gross, 260 long.

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**S. S. Freeman & Company, 705 Fife building, San Francisco.** United States Flag.

Operating the following privately-owned vessels, coastwise, every two weeks: s. schrs. Daisy, 679 gross, 175 long, 9 speed; Daisy Gadsby, 818 gross, 189 long, 9 speed; Daisy Putnam, 886 gross, 205 long, 9 speed; Daisy Matthews, 943 gross, 201 long, 9 speed.

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**Furness-Prince Line (Furness, Withy & Company, Ltd.), London.** British flag.

Agencies: Vancouver, Frank Waterhouse & Company; Seattle, Frank Waterhouse & Company; Tacoma, Frank Waterhouse & Company; Portland, Frank Waterhouse & Company; San Francisco, Swayne & Hoyt; Los Angeles, Swayne & Hoyt; Seattle, T. A. Lee, Pacific Coast representative.

Officials: chairman, Sir Frederick Lewis, Bart., London; American director, H. C. Blackiston, New York; freight traffic manager, Harry Connor, New York; marine superintendent, Captain H. H. McDougall, New York.

Operating the following privately-owned vessels, Pacific Coast to Europe, every month: frt. strs. Mongolian Prince, 5880 gross, 424 long, 12 speed; Eastern Prince, 7569 gross, 468 long, 12 speed; Siberian Prince, 5605 gross, 423 long, 10 speed; Barrymore, 6500 gross, 420 long, 12½ speed.

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**General Petroleum Corporation, Alaska Commercial Building, San Francisco; 1003 Higgins building, Los Angeles.** United States flag.

Agencies: Seattle, W. J. Dinsmore, local manager, 1710 Sixteenth avenue, S. W.; San Francisco, head office, and Los Angeles, general offices, see above; San Pedro, F. Maurer, local superintendent, Twenty-second and Front streets; Tampico, R. A. Sperry, manager.

Officials: president, John Barneson; vice-president and general manager, L. T. Barneson; operating manager, L. T. Barneson; marine director, William Walker; port engineer, Charles Irvin; comptroller, R. S. Durkee; treasurer, R. Mitchell; assistant treasurer, F. C. Adams; auditor, A. R. Barr.

Operating the following privately-owned tankers, various routes: strs. Liebre, 7057 gross, 453 long, 10 speed; Yorba Linda, 6900 gross, 453 long, 10 speed; sailing vessel Falls of Clyde, 1809 gross, 266 long. Also operating chartered tankers, Norwegian flag: strs. Belridge, 6047 gross, 433 long, 10 speed; Maricopa, 6047 gross, 433 long, 10 speed.

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**General Steamship Corporation, 324 Sansome street, San Francisco.** United States flag.

Agencies: Vancouver, Empire Shipping Company, Board of Trade building; Seattle, Colman building; Portland, 324 Railway Exchange building; Los Angeles, McCormick & McPherson, Merchants' National Bank building; own offices at Callao, Peru, Valparaiso, Chile, and agents at Honolulu, Australia, New Zealand, Mexico, Central and South America.

Officials: president, H. S. Scott; vice-president, Drew Chidester, operating manager, A. T. Hunter; marine superintendent, A. T. Hunter; port engineer, D. Dorward, Jr.; traffic manager, R. S. Wintemute; secretary-treasurer, E. J. Webber; purchasing agent, C. C. Houston.

Operating the following privately-owned vessel, San Francisco to South America, monthly: frt. str. Meriden, 2254 gross, 300 long, 10 speed.

Operating the following Shipping Board vessels, San Francisco to South America, monthly: frt. strs. Depere, 3475 gross, 332 long, 9½ speed; Derblay, 3475 gross, 332 long, 9½ speed; Jeptha, 3475 gross, 332 long, 9½ speed. San Francisco to Australasia, monthly: frt. strs. West Mahwah, 5587 gross, 423 long, 9½ speed; West Islip, 5775 gross, 426 long, 9½ speed; Hollywood, 5945 gross, 427 long, 9½ speed; West Hixton, 5356 gross, 423 long, 9½ speed; Las Vegas, 5404 gross, 423 long, 9½ speed.

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**W. R. Grace & Company, 7 Hanover Square, New York City; 332 Pine street, San Francisco.** United States flag.

Agencies: Seattle, Hoge building; San Francisco, 332 Pine street; Los Angeles, Merchants National Bank building.

Officials: president, Galen H. Carter, New York; marine superintendent, San Francisco, A. E. Moncaster; manager, San Francisco, E. T. Ford; manager steamship department, San Francisco, F. L. Doelker.

Operating the following privately-owned vessels, San Francisco to West Coast South America, sailings monthly: combn. strs. Colusa, 5873 gross, 408 long, 13 speed; Santa Cruz, 4826 gross, 384 long, 13 speed; frt. strs. Santa Rita, 1600 gross, 234 long, 11 speed; Santa Inez, 1742 gross 240 long, 10 speed; Santa Alicia, 2244 gross, 283 long, 10 speed; bark Belfast (Peruvian flag), 1752 gross, 260 long. Last three vessels temporarily withdrawn from West Coast service; engaged in coastwise trade.

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**Grand Trunk Pacific Coast Steamship Company, Limited., Montreal.** British flag.

Agency: Vancouver, C. N. R. Depot, Captain C. H. Nicholson, manager.

Officials: president, Howard G. Kelley; operating manager, Captain C. H. Nicholson; superintending engineer, A. L. Brownlie, Vancouver; shore steward, J. W. King, Vancouver, B. C.

Operating the following privately-owned vessels, Puget Sound to Northern B. C. ports, via Victoria and Vancouver, weekly: combn. strs. Prince Rupert, 3379 gross, 319 long, 19½ speed; Prince George, 3372 gross, 319 long, 19½ speed.

☆ ☆ ☆

**Henry Gray & Co., 817 Sansome street, San Francisco.** United States flag.

Operating the following privately-owned vessel, Papeete, Tahiti, 3½ months: schr. Roy Somers, 314 gross, 140 long.

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**Great Gulf Steamship Company (Congress Lines, Inc., agents), 2 Rector street, New York City.** United States flag.

Agencies: Seattle, Tacoma and Portland, Northwest Shipping Company; San Francisco, F. K. Hitching, 244 California street; Los Angeles, D. W. Ferguson, Henry building.

Operating the following privately-owned vessel, United States intercoastal trade, New York, Baltimore, Philadelphia to Los Angeles, San Francisco, Portland, Seattle, approximately twenty-five-day sailings: frt. str. Princess, 4920 gross, 428 long. Other vessels to be added.

☆ ☆ ☆

**James Griffiths & Sons, 502 Burke building, Seattle.** United States and British flags.

Agencies: Vancouver, S. Garnham, 805 Birks building; Seattle, 502 Burke building; San Francisco, Rinder & Cook, 24 California street.

Officials: president, James Griffiths; vice-president, Stanley A. Griffiths; operating manager, A. Wuthenow; port engineer, C. C. Tracey; auditor, J. A. Maitland; Trans-Pacific freight manager, A. J. Chalmers.

Operating the following privately-owned vessels, coastwise, every 14 days: frt. and tow'g. strs Anyox, 1287 gross, 193 long, 10 speed; coastwise, every 10 days, Amur, 907 gross, 216 long, 11 speed; coastwise, as required, barges Baroda, 1417 gross, 237 long; Coquitlam City, 984 gross, 190 long; General Fairchild, 1386 gross, 208 long; Granby No. 1, 1364 gross, 204 long; Granco, 2114 gross, 275 long; Griff, 560 gross, 140 long; San Francisco to Honolulu, every 25 days, frt. and tow'g. str. Griffco, 1463 gross, 220 long, 10 speed; San Francisco to Central America, every 30 days, frt. and tow'g. str. Griffdu, 1484 gross, 220 long, 10 speed; coastwise, as required, barges Griffnip, 280 gross, 110 long; Griffson, 2259 gross, 267 long; Henry Villard, 1486 gross, 218 long; John C. Potter, 1259 gross, 168 long; Independent No. 2, 240 gross, 110 long; Louisiana, 1462 gross, 210 long; every 14 days, frt. and tow'g str. Marmion, 324 gross, 140 long, 11 speed; as required, barge Pioneer No. 11, 560 gross, 140 long; tug Tartar, 128 gross, 90 long, 9 speed.

Also operating privately-owned Japanese vessels of Mitsui & Co. as follows, trans-Pacific, every 15 days: frt. strs. Mandasan Maru, 4313 gross, 360 long, 10 speed; Iwatesan Maru, 5860 gross, 385 long, 10 speed; Kinkasan Maru, 4971 gross, 380 long, 10 speed; Horaisan Maru, 6071 gross, 407 long, 11 speed; Tenpaisan Maru, 4975 gross, 385 long, 10 speed; Hoyeisan Maru, 6079 gross, 407 long, 11 speed.

See also Mitsui & Co.

☆ ☆ ☆

**Hammond Lumber Co., 260 California street, San Francisco.** United States flag.

Officials: president A. B. Hammond; vice-president, W. S. Burnett.

Operating privately-owned vessels in town lumber trade: frt. s. schrs. Flavel, 967 gross; Santiam, 946 gross; Halco, 970 gross; Trinidad, 974 gross.

☆ ☆ ☆

**J. R. Hanify Co., 24 Market street, San Francisco.** United States flag.

Agencies: Portland, 810 Northwestern Bank building; San Francisco, 24 Market street; Los Angeles, 522 Central building.

Officials: president, John R. Hanify; vice-president, E. de Reynier; operating manager, John R. Hanify; marine superintendent, John L. Reed.

Operating the following privately-owned vessels, San Pedro to Columbia River: s. schrs. Santa Barbara, 695 gross, 183 long; Santa Monica, 497 gross, 166 long; Anne Hanify, 1364 gross, 223 long; Ryder Hanify, 1364 gross, 223 long.

☆ ☆ ☆

**Harrison Direct Line, Thomas & James Harrison, Mersey Chambers, Liverpool, England.** British flag.

Agencies: Vancouver, Victoria, Seattle, Tacoma, San Francisco and Los Angeles: Balfour, Guthrie & Co.

The Harrison Direct Line maintains sailings of freight steamers at thirty-day intervals (at intervals of two weeks during the latter half of the year) between Vancouver, Victoria, Tacoma, Seattle, San Francisco, Los Angeles and London and Liverpool. Due to frequent changes of steamers no listing of vessels employed in the Pacific Coast trade can be made.

☆ ☆ ☆

**Hawaii Meat Company, Limited, 1033 Bethel street, Honolulu.** United States flag.

Officials: president, A. W. Carter; vice-president, W. H. Greenwell; operating manager, G. J. Waller, Sr.

Operating the following privately-owned vessel, Hawaiian inter-island, twice a week: frt. str. Bee, 1755 gross, 662 long, 9 speed.

☆ ☆ ☆

**Hind, Rolph & Co., Inc., 230 California street, San Francisco.** United States flag.

Official: president, Geo. U. Hind.

Operating the following privately-owned sailing vessels, carrying cargo only; not operated in any particular trade or route: wood bktn. Conqueror, 1395 gross, 231 long; steel bktn. Hawaii, 1085 gross, 196 long; wood schr. Honoipu, 564 gross, 162 long; wood bktn. Kohala, 891 gross, 195 long; wood bktn. Lahaina, 1067 gross, 217 long; wood bktn. Makaweli, 899 gross, 194 long; wood schr. Muriel, 537 gross, 162 long; wood bktn. Puako, 1085 gross, 221 long; wood schr. Robt. R. Hind, 564 gross, 162 long; steel bark Wm. T. Lewis, 2156 gross, 280 long.

☆ ☆ ☆

**Hobbs, Wall & Co., 1 Drumm street, San Francisco.** United States flag.

Agency: Crescent City, Del Norte Co., California.

Officials: president, W. J. Hotchkiss; vice-president, J. M. Hotchkiss; marine superintendent, R. W. Myers.

Operating the following privately-owned vessels, San Francisco to Crescent City and San Pedro, weekly: frt. s. schrs. Westport, 211 gross, 124 long, 8½ speed; South Coast, 301 gross, 131 long, 9 speed.

☆ ☆ ☆

**Holland America Line, Rotterdam.** Dutch flag.

Agencies: Vancouver, The R. M. S. P. Co., Pacific building; Seattle, The R. M. S. P. Co., 204 Rainier building; Portland, Oregon - Pacific Co., Wilcox building; Astoria, E. M. Cherry; San Francisco, Holland America Line, 401 Market street;

Los Angeles, C. J. Lehman, 736 Pacific Electric building.

Operating the following privately-owned vessels, Europe, monthly: strs. Eemdijk, 7651 gross, 470 long, 12 speed, Kinderdijk, 7651 gross, 470 long, 12 speed, Moerdijk, 9065 gross, 471 long, 13 speed; and extra steamers for one trip only.

See also Royal Mail Steam Packet Company, with which Holland America maintains joint service.

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**Inter-Island Steam Navigation Co., Ltd., Honolulu.** United States flag.

Officials: president, James A. Kennedy; vice-president, J. M. Dowsett; operating manager, Stanley C. Kennedy; port engineer, J. S. Muirhead; port captain, Captain S. A. Crosby.

Operating the following privately-owned vessels, Honolulu to Hilo, bi-weekly: combn. strs. Mauna Kea, 1566 gross, 239 long, 14 speed; Honolulu to Kahului, bi-weekly, Kilauea, 1338 gross, 241 long, 15 speed; in reserve, Waimea, 1056 gross, 198 long, 10 speed; Honolulu to Kauai, bi-weekly, Kinau, 975 gross, 195 long, 10 speed; Honolulu to Kauai, weekly, Claudine, 846 gross, 179 long, 11 speed; Honolulu to Kona and Kau, every 10 days, Mauna Loa, 850 gross, 177 long, 11½ speed; tramp frt. strs. Helene, 618 gross, 171 long, 10 speed; Onomea, 736 gross, 178 long, 9 speed; Honolulu to Maui and Molokai, weekly, combn. strs. Mikahala, 444 gross, 147 long, 10 speed; Honolulu to Kauai, weekly, Likelike, 374 gross, 136 long, 9 speed; tramp frt. strs. Kaiulani, 384 gross, 140 long, 8 speed; Niihau, 341 gross, 148 long, 7 speed.

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**I. S. C. Lines (Sea Carriers, Inc.—Intercoastal Lines).** United States flag.

Agencies: Houlder, Weir & Boyd, general agents, Atlantic Coast, 24 State street, New York City; Struthers & Barry, general agents, Pacific Coast, 343 Sansome street, San Francisco.

Operating the following privately-owned vessels, thirty-day sailings, Seattle, San Francisco, Los Angeles to Baltimore, New York, Boston (if cargo offers): A. L. Kent, 6214 gross, 394 long, 10 speed; Felix Taussig, 6253 gross, 395 long, 10 speed; Thos. P. Beal; William A. McKenney, 6256 gross, 395 long, 10 speed. Vessels owned by Crowell & Thurlow.

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**Isthmian Steamship Lines (United States Steel Products Company), 39 Courtland street, New York City.** United States flag.

Agencies: Norton, Lilly & Company, general agents Pacific Coast; Vancouver, B. W. Greer & Son, Ltd., Bank of Nova Scotia building; and Norton, Lilly & Company as follows: Seattle, Alaska building; Portland, Yeon building; San Francisco, American National Bank building; Los Angeles, Van Nuys building; San Diego, Spreckels building.

Operating privately-owned vessels as follows: United States intercoastal service, Boston, New York, Baltimore, Philadelphia to San Diego, Los Angeles, San Francisco, Portland, Seattle, Vancouver and return, sailings at approximately ten-day intervals. Hawaiian Island service, New York to Los Angeles, San Francisco, Honolulu and other island ports of call and return, sailings at approximately thirty-day intervals. Occasional service New Orleans, Mobile and Galveston to Pacific Coast ports and return. Pacific Coast-United Kingdom service, Pacific Coast ports to Liverpool, Avonmouth, London, sailings at approximately thirty-day intervals. Vessels employed in these different services: Atlanta City, 5686 gross, 441 long; Anniston City, sister; Birmingham City, 6032 gross, 395 long; Bessemer City, 5687 gross, 441 long; Bantu, 4229 gross, 360 long; Charlton Hall, 4749 gross, 400 long; Chattanooga City, 5686 gross, 441 long; Craster Hall, 4319 gross, 380 long; Ensley City, 6157 gross, 395 long; Fairfield City, 5687 gross, 424 long; Howick Hall, 5096 gross, 400 long; Knoxville City, 5686 gross, 441 long; Memphis City, 5686 gross, 441 long; Mobile City, 6157 gross, 395 long; Montgomery City, 5685 gross, 424 long; Robin Adair, 6859 gross; Robin Goodfellow, 6939 gross; Robin Gray, 6859 gross, all 424 long; Santa Rosalia, 5409 gross, 406 long; Selma City, 5686 gross, 412 long; Steel Age, 6188 gross, 393 long; Steelmaker and Steel Voyager, 6188 gross, 393 long; Steel Exporter, Steel Inventor, Steel Mariner, Steel Ranger, Steel Scientist, Steel Seafarer, Steel Worker, all 5686 gross, 424 long.

Also operating British flag vessels in Pacific Coast-United Kingdom-Continent service, Pacific Coast ports to London, Liverpool, Glasgow, Havre, Hull, Southampton, Amsterdam, Rotterdam, Antwerp, monthly sailings: frt. strs. Northumberland, 12,160 gross, 530 long, 16-18 speed; Woodarra, 7946 gross, 449 long, 15 speed; both refrigerator vessels; other steamships to be added.

See also E. C. Evans & Sons.

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**Isthmian Steamship Lines,** European Service; see E. C. Evans & Sons.

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**Java - China - Japan Lijn, Batavia, Java.** Dutch flag.

Agencies: Vancouver, Dingwald Cotts; Seattle, Tacoma, Portland and Astoria, General Steamship Corporation; San Francisco, J. D. Spreckels & Bros. Co., general agents.

Operating the following privately-owned vessels, San Francisco to Java via Japan and China, sailings from San Francisco about every three weeks: frtrs. Simaloer, 6587 gross, 438 long, 13 speed; Arakan, 5106 gross, 400 long, 13 speed; Gorontalo, 5884 gross, 394 long, 13 speed; Saleier, 6611 gross, 438 long, 13 speed; Tjisalak, 5787 gross, 420 long, 13 speed; Tjileboet, 5760 gross, 420 long, 13 speed.

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**Johnson Line (Rederiaktibolaget Nordstjernan), Stockholm, Sweden.** Swedish flag.

Agencies: Vancouver, C. Gardner Johnson; Seattle, Portland and San Francisco, W. R. Grace & Co.; Los Angeles, M. F. McLaurin.

Operating the following privately-owned combn motorships, San Francisco to Central America, Panama Canal, Havre, Hamburg and Scandinavian ports, approximately monthly sailings: Buenos Aires, 5614 gross, 426 long, 12 speed; Balboa, 5524 gross, 426 long, 12 speed; Canada, 5527 gross, 426 long, 12 speed; Pedro Christophersen, 4910 gross, 360 long, 10 speed; San Francisco, 3707 gross, 362 long, 10 speed; Valparaiso, 3762 gross, 364 long, 11 speed; Suecia, 3730 gross, 359 long, 10 speed; Pacific, 3731 gross, 360 long, 10 speed; Kronprinsessan Margareta, 3739 gross, 360 long, 10 speed; Kronprins Gustaf Adolf, 4944 gross, 359 long, 10 speed.

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**E. & E. T. Kruse, 24 California street, San Francisco.** United States flag.

Agency: Bandon, Oregon, J. E. Walstrom.

Operating the following privately-owned vessels, San Francisco to Bandon, every eight days: combn. str. Elizabeth, 425 gross, 142 long, 8 speed; coastwise and Gray's Harbor, frt. str. Helene, 672 gross, 172 long, 8 speed.

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**Kuskokwim Fishing & Transportation Co., 7 Colman Dock, Seattle.** United States flag.

Officials: president, Captain Louis Knaflich.

Operating the following privately-owned vessels, Seattle, Kuskokwim River, Behring Sea, twice yearly, commencing in May: twin-screw combn. Anvil, 363 gross, 116 long, 10 speed; Seattle to Behring Sea and South Arctic ports, once yearly, commencing in May, aux. schr. Ruby, 345 gross; 132 long, 7 speed.

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**Latin America Line;** see R. S. Silva & Company.

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**Lewers & Cooke, Ltd., Honolulu.** United States flag.

Officials: president, F. J. Lowrey; vice-president, F. D. Lowrey.

Operating the following privately-owned vessels, Puget Sound to Honolulu, every three months: schrs. Alice Cooke, 782 gross, 185 long; Robert Lewers, 732 gross, 185 long.

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**Libby, McNeil & Libby, Seattle.** United States flag.

Officials: president, W. F. Burrows; vice-president, E. G. McDougall; operating manager, D. W. Branch.

Operating the following privately-owned vessels, various ports: m. s. Libby Maine, 1811 gross, 240 long, 7 speed; W. F. Burrows, 1560 gross, 201 long, 6 speed; Seattle to Alaska, yearly, s. s. Abner Coburn, 1973 gross, 225 long; barks W. B. Flint, 835 gross, 178 long; George Curtis, 1837 gross, 240 long; Oriental, 1688 gross, 220 long; schrs. Henry Wilson, 499 gross, 157 long; Salvator, 465 gross, 160 long; s. s. San Juan, 248 gross, 118 long, 10 speed; George F. Haller, 185 gross, 101 long, 8 speed; North Star, 99 gross, 73 long, 9 speed; gas. s. Willard B., 64 gross, 73 long, 8 speed; President, 50 gross, 72 long, 8 speed; Excursion, 46 gross, 65 long, 9 speed; Expansion, 175 gross, 104 long, 8 speed; Bonita, 98 gross, 78 long, 8 speed; Ahrnklin, 52 gross, 66 long, 8 speed; cannery tenders, gas s. Arnold G., 16 gross, 34 long, 8 speed; Bernice, 15 gross, 44 long, 8 speed; Climax, 10 gross, 28 long, 8 speed; Charlotte B., 71 gross, 74 long, 9 speed; Comet, 41 gross, 56 long, 8 speed; Glenn, 34 gross, 49 long, 9 speed; George S., 43 gross, 57 long, 9 speed; Helen T., 32 gross, 50 long, 8 speed; John L. C., 26 gross, 62 long, 8 speed; Leona K., 47 gross, 59 long, 8 speed; Mitchell, 14 gross, 49 long, 8 speed; May, 10 gross, 45 long, 8 speed; Nuten, 22 gross, 44 long, 8 speed; Olaf, 21 gross, 42 long, 8 speed; Olga, 14 gross, 40 long, 8 speed; Pride of Alaska, 15 gross, 53 long, 8 speed; St. James, 10 gross, 32 long, 8 speed; Triumph, 15 gross, 53 long, 8 speed; Vigilant, 14 gross, 39 long, 8 speed.

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**H. Liebes & Co., 167 Post street, San Francisco.** United States flag.

Officials: president, Leon Liebes; vice-president, Arnold Liebes; operating manager, C. T. Pedersen; marine superintendent, C. T. Pedersen.

Operating the following privately-owned vessels, San Francisco to Arctic Ocean, once each year: gas s. Herman, 362 gross, 131 long, 6 speed; s. Fox, 343 gross, 145 long.

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**Fred Linderman, 110 Market street, San Francisco.** United States flag.

Officials: president, Fred Linderman; operating manager, Fred Linderman; port engineer, L. C. Bartmess.

Operating the following privately-owned vessels, Puget Sound to San Francisco and San Pedro, every three weeks: s. schrs. Henry T. Scott, 1600 gross, 250 long, 10 speed; Cricket, 1136 gross, 224 long, 10 speed; Puget Sound and San Francisco, every three weeks, Rosalie Mahony, 884 gross, 196 long, 9 speed.

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**Little River Steamship Co., 112 Market street, San Francisco.** United States flag.

Officials: president, H. W. Cole; vice-president, L. Crannell; operating manager, H. W. Cole; port engineer, Phil. Sheridan; secretary-treasurer, W. D. Dunning.

Operating the following privately-owned vessel, San Francisco to Eureka, weekly: s. schr. Washington, 539 gross, 159 long, 9 speed.

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**Loop Lumber Company, foot of Sixteenth street, San Francisco.** United States flag.

Officials: president, Wm. Chatham; vice-president, C. Frantz; operating manager, Wm. Chatham; marine superintendent, T. L. Tomlinson; port engineer, A. F. Bulotti.

Operating the following privately-owned vessels, San Francisco to Puget Sound, every two weeks: frt. schrs. F. S. Loop, 795 gross, 193 long, 9½ speed; San Francisco to Columbia River, every two weeks, Johan Poulsen, 650 gross, 179 long, 10 speed.

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**Los Angeles Steamship Company, Wilmington, Cal.** United States flag.

Agencies: San Francisco, H. B. Hatch, 685 Market street; Los Angeles, R. F. Cullen, 517 South Spring street; Long Beach, California, 119 West Ocean avenue; Pasadena, California, 116 East Colorado; San Pedro, 629 Beacon street; Oakland, 1422 San Pablo avenue; Berkeley, 2127 University avenue.

Officials: president, Fred L. Baker; vice-president, General M. H. Sherman; vice-president and general manager, Ralph J. Chandler; marine superintendent, Captain N. H. Anderson; port engineer, Steven Lindo; assistant to general manager, G. W. Green; general auditor, R. P. Dunbar; general passenger agent, R. V. Crowder; general freight agent, G. C. Foster.

Operating the following privately-owned vessels, Los Angeles to San Francisco, Tuesday, Wednesday, Friday and Saturday: pass. strs. Yale and Harvard, 3825 gross, 407 long, 23 speed.

The Shipping Board combination vessels Aeolus and Huron have been assigned to this company for a Los Angeles-Hawaii service, which will begin in the spring.

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**Luckenbach Steamship Company, 44 Whitehall street, New York.** United States flag.

Agencies: Vancouver, Dominion Shipping Co.; Seattle, 812 L. C. Smith building; Tacoma, Seattle office; Portland, 424 Railway Exchange building; Astoria, Geo. W. Sanborn & Sons; San Francisco, 804 Merchants Exchange; Los Angeles, 711 Central building; Oakland, 214 Henshaw building; San Diego, Spreckels Bros. Commercial Co.

Officials: president, Edgar F. Luckenbach; vice-presidents, R. C. Thackara and J. L. Luckenbach; operating manager, A. Carlson; marine superintendent, F. L. Work; secretary, Lewis Luckenbach; treasurer, Paul Kuhne.

Operating the following privately-owned vessels, intercoastal Pacific and Atlantic ports, every eight days: frt. strs. Andrea F. Luckenbach, 10,798 gross, 496 long, 13 speed; Edgar F. Luckenbach, 8061 gross, 425 long, 12 speed; Edward Luckenbach, 8151 gross, 436 long, 14 speed; F. J. Luckenbach, 8074 gross, 446 long, 13 speed; Florence Luckenbach, 4909 gross, 401 long, 10 speed; Harry Luckenbach, 8713 gross, 449 long, 14 speed; J. L. Luckenbach, 4920 gross, 428 long, 9½ speed; Julia Luckenbach, 8151 gross, 436 long, 14 speed; K. I. Luckenbach, 8074 gross, 446 long, 14 speed; Katrina Luckenbach, 8074 gross, 446 long, 14 speed; Lewis Luckenbach, 10,798 gross, 496 long, 13 speed; Walter A. Luckenbach, 8286 gross, 447 long, 14 speed; Pacific and Gulf ports, every fifteen days, Frederick Luckenbach, 2903 gross, 317 long, 9½ speed; Hattie Luckenbach, 4417 gross, 331 long, 9½ speed; Pleiades, 3753 gross, 331 long, 9½ speed; Agwidale, 7410 gross, 331 long, 11 speed.

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**Matson Navigation Company, 120 Market street, San Francisco.** United States flag.

Agencies: Vancouver, Seattle, Tacoma, Portland, Alexander & Baldwin, Ltd., Seattle; San Francisco, Los Angeles, Matson Navigation Company; Manila, P. I., Welch, Fairchild & Co.

Officials: president, E. D. Tenney; vice-president, W. P. Roth; operating manager, C. W. Saunders; marine superintendent, Captain F. M. Edwards; port engineer, J. Barker.

Operating the following privately-owned vessels, San Francisco and Puget Sound to Hawaiian Islands, every 42 days: frt. Manulani, 14,000 d.w., 497 long, 12½ speed; San Francisco to Hawaiian Islands, every 28 days, Manukai, 14,000 d.w., 497 long, 12½ speed; frt. and pass., Maui, 10,261 gross, 501 long, 15 speed; Matsonia, 9402 gross, 501 long, 15 speed; Wilhelmina, 6974 gross, 451 long, 13½ speed; Manoa, 6805 gross, 446 long, 13 speed; San Francisco to Hawaiian Islands, every 42 days, Lurline, 5928 gross, 437 long, 12½ speed; San Francisco to Hawaiian Islands, every 35 days, frt. Hyades, 3753 gross, 331 long, 9½ speed; San Francisco to Hawaiian Islands, every 28 days, frt. and pass. Enterprise, 2675 gross, 323 long, 11 speed; San Francisco to Hawaiian Islands about 60 days, frt. Annie Johnson, 1044 gross, 212 long, 7 speed.

Shipping Board steamers, Baltimore and San Francisco to Hawaiian Islands, every 70 days: Hawkeye State, 14,123 gross, 535 long, 17½ speed; Buckeye State, 14,123 gross, 535 long, 17½ speed.

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**Chas. R. McCormick & Company, 900 Fife building, San Francisco.** United States flag.

Agencies: Portland, Yeon building; Los Angeles, Van Nuys building; New York, 17 Battery Place.

Officials: president, Chas. R. Mc-

Cormick; vice-president, S. M. Hauptman; operating manager, John M. Hencken.

Operating the following privately-owned vessels, coastwise between Puget Sound, Portland to San Francisco, San Pedro and San Diego, every three weeks: combn strs. Willamette, 903 gross, 195 long, 10 speed; Multnomah, 969 gross, 205 long, 10 speed; Celilo, 943 gross, 205 long, 10 speed; Wapama, 951 gross, 205 long, 10 speed; no schedule, frt. strs. Wahkeena, 1030 gross, 213 long, 10 speed; Ernest H. Meyer, 1057 gross, 213 long, 10 speed; Everett, 1751 gross, 237 long, 11 to 14 speed.

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**McCormick & McPherson, 503 Market street, San Francisco, and 548 South Spring street, Los Angeles.**

Officials: E. L. McCormick and W. S. McPherson, partners; operating manager, T. G. Plant; port engineer, S. Mills.

Agents for different steamship lines, particularly for Osaka Shosen Kaisha, which see. Representing privately-owned vessels of Osaka Shosen Kaisha, Japanese flag, as follows, San Francisco to Orient: frt. str. Hague Maru, 7770 gross, 10 speed; San Francisco to Havana, frt. str. Amur Maru, 7770 gross, 10 speed; South America to Los Angeles to Orient, monthly sailings, frt. strs. Tacoma Maru, 5850 gross, 10 speed; Panama Maru, 5789 gross, 10 speed; Seattle Maru, 5852 gross, 10 speed; Mexico Maru, 5761 gross, 10 speed; Chicago Maru, 5848 gross, 10 speed; Canada Maru, 5759 gross, 10 speed.

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**Mexican Navigation Co., Inc., Mexico City, Gante 19; general office, Guaymas, Son., Mex.** Mexican flag.

Agencies: San Francisco, Anglo-Southern Co., general agents, 50 California street, Francisco Seldner, traffic manager; Los Angeles, Los Angeles Freight Forwarding Co., 333 New High street.

Officials: president, Jacinto Lasa; vice-president, A. Peralta.

Operating the following privately-owned vessel, San Francisco to Mexico, every 40 days: frt. and pass. Mexico, 2548 gross, 310 long, 12 speed. After January 1 another vessel will be put on this run, to be extended to Corinto, Nicaragua. Company operates six steamers on Atlantic between New Orleans and Progreso, Yucatan. Also two steamers between Mexican ports, Guaymas and Salina Cruz, 1800 gross tons each, named Bolivar and Washington.

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**Mexican States Steamship Line (Cia. Naviera de los Estados de Mexico S. A.), Mazatlan, Sinaloa, Mexico.** Mexican flag.

Agencies: San Francisco, Coppel Brothers, 519 California street; Los Angeles, Swayne & Hoyt, 794 Pacific Electric building; and at all ports of call, Ensenada, San Jose del Cabo, Guaymas, Santa Rosalia, La Paz, Topolobampo, Manzanillo, Acapulco, Puerto Angel and Salina Cruz.

Officials: general manager, James Irvine, Mazatlan; assistant general manager, H. S. Winter, temporarily at Los Angeles.

Company will operate six combination steamers between San Francisco, Los Angeles Harbor to Mexican Coast and Gulf ports as follows: Ensenada, Mazatlan, San Jose del Cabo, Guaymas, Santa Rosalia, La Paz, Topolobampo, Manzanillo, Acapulco, Puerto Angel and Salina Cruz. Vessels will be of 800 to 1000 tons deadweight, with accommodations for 110 passengers, first and second cabin. Service expected to begin early in 1922; bi-monthly sailings scheduled. Vessels: strs. Chihuahua, Colma, Sinaloa, Chipas, Oaxaca, Guerrero, all built in England.

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**Mitsui & Co., Ltd. (Mitsui Bussan Kaisha, Ltd.), Tokyo, Japan.** Japanese flag.

Agencies: Seattle, Mitsui & Co., Ltd., American Bank building; Portland, Mitsui & Co., Ltd., Wilcox building; San Francisco, Mitsui & Co., Ltd., Merchants Exchange building; New York, Mitsui & Co., Ltd.,,65 Broadway; Kobe, Yokohama, Shanghai, London, Marseilles, Lyons, Bombay, Calcutta, Singapore, Batavia, Sourabaya, Sydney, Manila, Hongkong, Vladivostok and other principal cities of the world.

Operating the following privately-owned vessels, San Francisco, Portland, Seattle to Japan and China, sailings every three weeks: frt. strs. Azumasan Maru, 4349 gross, 360 long, 9 speed; Horaisan Maru, 6071 gross, 407 long, 10½ speed; Iwatesan Maru, 5860 gross, 385 long, 10½ speed; Mandasan Maru, 4313 gross, 360 long, 10 speed. In addition to these vessels company has engaged eleven other vessels for one voyage to Orient.

See also James Griffiths & Sons.

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**Naknek Packing Co., 73 Main street, San Francisco.** United States flag.

Officials: president and operating manager, Frank B. Peterson; vice-president, Ferd C. Peterson.

Owns following sailing vessels, which are used in own salmon canning business exclusively: bark Pactolus, 1673 gross; bark B. P. Cheney, 1322 gross. In commission about six months during summer; remainder of year laid up at Oakland.

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**National Steamship Co., 1008 Crocker building, San Francisco.** United States flag.

Officials: president, O. R. Johnson; vice-president, C. Hexberg; marine superintendent, C. Hexberg.

Operating the following privately-owned vessels, coastwise: strs Arctic, 389 gross, 145 long, 10 speed; Brunswick, 532 gross, 161 long, 10 speed; Coquille River, 415 gross, 146 long, 9 speed.

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**The Charles Nelson Co., 230 California street, San Francisco.** United States flag.

Agencies: Vancouver and Seattle, Dawson Terminals Co.; Portland, Oregon-Pacific Co.; Los Angeles, E. D. Howard; Eureka, E. D. McDonald.

Officials: president, James Tyson; vice-president, H. W. Jackson; operating manager, James K. Nelson; marine superintendent, James K. Nelson; port engineer, L. C. Bartmess; port captain, R. Anderson.

Operating the following privately-owned vessels between ports of Pacific Coast only: s. schrs. Mayfair, 670 gross, 174 long, 9 speed; Mukilteo, 1230 gross, 225 long, 9 speed; Nome City, 939 gross, 230 long, 9 speed; Port Angeles, 1358 gross, 235 long, 9½ speed; Saginaw, 886 gross, 191 long, 9 speed; Wilmington, 990 gross, 210 long, 9 speed.

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**New England Fish Co.; head office on Pacific Coast, Vancouver, B. C.**

Operating fishing boats only, except motorship Washington, between Seattle, Vancouver and Ketchikan.

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**Nippon Yusen Kaisha, Tokyo, Japan.** Japanese flag.

Agencies: Vancouver, B. W. Greer & Son; Seattle, 409 Colman building; San Francisco, Dodwell & Co.; Los Angeles, Dodwell & Co.; Victoria, B. C., W. R. Dale, agent, Great Northern Railway.

Officials: president, Y. Ito; American manager, M. Watanabe; port captain, Seattle, Captain U. Osawa; Seattle sub-manager, S. Ogata.

Operating the following privately-owned vessels, Seattle to Orient, every 21 days: combn strs. Fushimi Maru, 10,928 gross, 525 long, 17½ speed; Suwa Maru, 10,927 gross, 525 long, 17½ speed; Kashima Maru, 9898 gross, 510 long, 17¼ speed; Katori Maru, 9835 gross, 510 long, 17½ speed; Seattle to Japan, frt. strs. Toyama Maru, 7089 gross, 445 long, 11½ speed; Tokushima Maru, 5972 gross, 422 long, 10 speed; Tokiwa Maru, 6971 gross, 445 long, 11½ speed; Hakata Maru, 5969 gross, 415 long, 10 speed; Toyooka Maru, 7097 gross, 445 long, 11½ speed.

Operating privately-owned frt. strs., New York-Far East Line, Kobe, Yokohama, Muroran to San Francisco, Panama, Colon, Havana, New York and return, four-weekly sailings (Dodwell & Co., agents San Francisco, Oceanic building, and Los Angeles, Union Oil building): Toba Maru, 6995 gross, 445 long, 10 speed; Toyama Maru, 7090 gross, 445 long, 10 speed; Taketoyo Maru, 7028 gross, 445 long, 10 speed; Takaoka Maru, 7047 gross, 445 long, 10 speed; Lyons Maru, 7018 gross, 445 long, 10 speed; Dakar Maru, 7170 gross, 420 long, 10 speed; Durban Maru, 7164 gross, 420 long, 10 speed.

**North Atlantic & Western Steamship Company (Nawsco Line), 111 Summer street, Boston.** United States flag.

Agency: Agent Pacific Coast, Pacific Steamship Company, which see.

Officials: president, Charles E. Ware; vice-president and acting general manager, Henry Parkman, Jr.; traffic manager, J. D. Hashagen.

Operating the following privately-owned vessels, Puget Sound ports, Portland, San Francisco, Los Angeles to Charleston, Baltimore, New York, tri-weekly sailings: frt. strs. Deerfield, 7551 gross, 434 long, 10½ speed; Neponset, 7435 gross, 434 long, 10½ speed (both these are refrigerator vessels); West Catanace, 6132 gross, 410 long, 11 speed (these three vessels owned by Elder Steel Steamship Company, last not refrigerated); Dochra, 4309 gross, 376 long, 10 speed (refrigerator vessel owned by Barber Line, chartered by Nawsco).

Operating the following Shipping Board vessels, Puget Sound ports, Portland, Oregon, San Francisco, Los Angeles to Philadelphia, New York, Boston, Portland, Maine, bi-weekly sailings: frt. strs. Lehigh, 5103 gross, 410 long, 10 speed; West Isleta, 5680 gross, 410 long, 10 speed; Cold Harbor, 5086 gross, 390 long, 10 speed; Springfield, 5641 gross, 410 long, 10 speed; Artigas, 5620 gross, 390 long, 10 speed; Brush, 5543 gross, 390 long, 10 speed (last vessel being purchased by Nawsco).

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**Northern Commercial Company, San Francisco.** United States flag.

Agency: Seattle, J. L. Burnside, 508 Alaska Building.

Officials: president, Louis Sloss; vice-president, Louis Sloss, Jr.

Operating the following privately-owned vessels, San Francisco to Alaska, irregular sailings: motor schr. Ozmo, 765 gross, 160 long, 7 speed.

* * *

**Northern Fisheries, Inc., 141 Clay street, San Francisco.** United States flag.

Officials: president, C. P. Hale; vice-presidents, M. Fleishhacker and Fred D. Cartwright; secretary, C. I. Sturrock; treasurer, C. E. Cocks.

Operating the following privately-owned vessels, San Francisco to Alaska, once a year: gas. schr. Progress, 169 gross, 90 long, 8 speed.

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**Northwestern Fisheries Company (Booth Fisheries Company of Delaware, owners), Pier 11-B, Seattle.** United States flag.

Officials: president, K. L. Ames, Chicago; vice-president C. H. Whitelaw, Seattle; second vice-president, P. L. Smithers, Chicago; general superintendent, P. H. McCue, Seattle; port captain, Captain H. DeGueldre.

Operating the following privately-owned vessels, carrying supplies and crews to canneries in Alaska and returning with canned salmon, Seattle to Chignik, Alaska, sails north in spring, returns in fall: sailing ships St. Paul, 1893 gross, 228 long; Seattle to Nushagak, Alaska, sails north in spring, returns in fall: Benj. F. Packard, 2156 gross, 244 long; Seattle to Naknek, Alaska, sails north in spring, returns in fall: bark Guy C. Goss, 1572 gross, 214 long.

* * *

**Northwestern Shipping Company, 619 Colman building, Seattle.** United States flag.

Officials: president, Charles E. Peabody; vice-president, Joshua Green; operating manager, Joshua Green; secretary-treasurer, F. E. Burns.

Operating the following privately-owned vessel: s. schr. H. B. Lovejoy, 1067 gross, 215 long, 8-10 speed. For charter; laid up at present.

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**Norton, Lilly & Company**—Agents for Ellerman's Wilson Line, Isthmian Steamship Lines, Societe Generale de Transports de Maritimes a Vapeur, which see.

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**Norway Pacific Line, Christiania, Norway.** Norwegian flag.

Officials: president, Captain F. S. Olsen; vice-president, F. William Kutter.

Operating the following privately-owned vessels, Pacific Coast to Europe, every six weeks: M.S. George Washington, 7093 gross, 425 long, 11 speed; Theodore Roosevelt, 7093 gross, 425 long, 11 speed; Borgland, 4893 gross, 377 long, 9 speed.

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**Ocean Motorship Company, 310 California street, San Francisco.** United States flag.

Agency: Seattle, Wm. W. Mitchell, 1317 L. C. Smith building.

Officials: president, W. E. Gerber, Jr.; vice-president, R. H. Holmberg; operating manager, E. C. Genereaux; secretary, C. N. Howard.

Operating the following privately-owned vessels, coastwise and offshore: M.S. Benowa, 3093.36 gross, 282 long, 9 speed; Babinda, 3098.58 gross, 282 long, 9 speed; Booyalla, 3099.65 gross, 283 long, 9 speed; Cethana, 2341 gross, 260 long, 9 speed; Coolcha, 2403 gross, 260 long, 9 speed; Challamba, 2400 gross, 260 long, 9 speed; Culburra, 2353 gross, 260 long, 9 speed.

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**Oceanic Steamship Company, 2 Pine street, San Francisco.** United States flag.

Agencies: Los Angeles, A. M. Culber, 517 South Spring street; Honolulu, C. Brewer & Company, Ltd.; Sydney, V. A. Sproul, Pitt and Bridge streets.

Officials: president, J. D. Spreckels; vice-president, A. B. Spreckels; operating manager, F. S. Samuels; marine superintendent, W. J. Owens.

Operating the following privately-owned vessels, between San Francisco and Sydney via Honolulu and Samoa, sailings each twenty-eight days: combn. strs. Sonoma, 6279 gross, 400 long, 16½ speed; Ventura, 6282 gross, 400 long, 16½ speed.

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**Osaka Shosen Kaisha, Osaka, Japan.** Japanese flag.

Agencies: Vancouver, C. Gardner Johnson & Company; Seattle, W. C. Dawson & Company; Tacoma, O. S. K. branch; San Francisco, McCormick & McPherson; Los Angeles, McCormick & McPherson; Victoria, Rithet, Consolidated; also branches or agencies in Yokohama, Kobe, Moji, Nagasaki, Manila, Shanghai, Hongkong, Singapore, Bombay, Calcutta; Japanese cities of Beppu, Kagoshima, Kochi, Osaka, Simonoseki, Takahama, Takamatsu, Tokyo, Ujina, Wakamatsu, Aomori, Fushiki, Hakodate, Kyoto, Nagoya, Nanao, Niigata, Otaru, Tsuruga, Naha, Yebisu, Yokkaichi; Korean cities of Chinnampo, Gensan, Joshin, Kunsan, Masan, Mokpo, Ryugampo, Seikoshin, Seishin, Shimpo, Shingishu; Chinese cities of Antoken, Chefoo, Swatow, Tsingtao, Yangtse ports, Yinkaw; also Port Arthur, Bangkok, Batavia, Deli, Hoi Hau, Karachi, Medan.

Officials: president, K. Hori; vice-president, J. Yamaoka; operating manager, R. Kafuku; marine superintendent, H. Ohta.

Operating the following privately-owned vessels, Puget Sound to Japan, China and Philippine Islands, fortnightly sailings: combn. strs. Africa Maru, 9500 gross, 475 long, 16 speed; Arabia Maru, 9500 gross, 475 long, 16 speed; Manila Maru, 9518 gross, 475 long, 16 speed; Hawaii Maru, 9484 gross, 475 long, 16 speed; Arizona Maru, 9695 gross, 495 long, 16 speed; Alabama Maru, 9695 gross, 495 long, 16 speed; San Francisco to Japan, China, Philippine Islands and Singapore (New York-Orient Line), monthly sailings: frt. strs. Hague Maru, 5813 gross, 407 long, 14 speed; Havana Maru, 5823 gross, 407 long, 14 speed; Havre Maru, 5821 gross, 407 long, 14 speed; Amur Maru, 7770 gross, 425 long, 14 speed; Honolulu Maru, 5751 gross, 407 long, 14 speed; Shunko Maru, 6786 gross, 425 long, 10 speed; Los Angeles to Japan (South American Line), ten sailings a year: comb. strs. Canada Maru, 5760 gross, 400 long, 15 speed; Tacoma Maru, 5850 gross, 410 long, 15 speed; Panama Maru, 5790 gross, 400 long, 15 speed; Seattle Maru, 5853 gross, 410 long, 15 speed; Mexico Maru, 5761 gross, 400 long, 15 speed; Chicago Maru, 5848 gross, 410 long, 15 speed; Los Angeles or San Francisco to Japan, China, Singapore and Calcutta (New Orleans-Calcutta Line), eight sailings a year: frt. strs. Sumatra Maru, 5863 gross, 385 long, 12 speed; Hamburg Maru, 5220 gross, 400 long, 12 speed; Celebes Maru, 5863 gross, 385 long, 12 speed; Borneo Maru, 5863 gross, 385 long, 12 speed.

See also McCormick & McPherson.

**Pacific American Fisheries, South Bellingham, Washington.** United States flag.

Officials: president, E. B. Deming; vice-president, A. W. Deming; operating manager, H. B. Drisko.

Operating the following privately-owned vessels in cannery work with Alaska canneries: frt. str. Windber, 2837 gross, 290 long, 9 speed; pass. str. Catherine D., 2224 gross, 250 long, 9 speed; frt. str. Redwood, 1793 gross, 235 long, 9 speed; pass-str. Norwood, 1327 gross, 209 long, 9 speed.

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**Pacific Commercial Navigation Company, Ltd., 918 Kekaulike street, Honolulu.** United States flag.

Agency: Portland, E. K. Wood Lumber Company.

Officials: president, Ho Fon; vice-president, Lau Tang; operating manager, C. K. Ai.

Operating the following privately-owned vessels, Sound ports to Honolulu: schr. Columbia, 663 gross, 181 long. Sound ports to Honolulu and other island ports: M.S. Pioneer (laid up).

* * *

**Pacific Freighters Company, 310 California street, San Francisco.** United States flag.

Operating the following privately-owned vessels, irregular sailings on charter: bktns. Alicia Haviside, 2265 gross, 282 long; Anne Comyn, 2265 gross, 266 long; Katherine Mackall, 2262 gross, 266 long; Russell Haviside, 2263 gross, 266 long; Phyllis Comyn, 2266 gross, 266 long; Chas. F. Crocker, 860 gross, 204 long; schrs. John W. Wells, 2538 gross, 268 long; Rosamond, 1030 gross, 201 long; Watson A. West, 818 gross, 192 long.

* * *

**Pacific Mail Steamship Company, 508 California street, San Francisco.** United States flag.

Agencies: Calcutta, The Angus Company, Ltd.; Colombo, Lee Hedges & Company; Hongkong, Pacific Mail Steamship Company, Hotel Mansions building; Kobe, Pacific Mail Steamship Company, 16 Maye-Machi; Manila, Pacific Mail Steamship Company, 102 Calle Nueva, off Escolta; Shanghai, Pacific Mail Steamship Company, 1-B Nanking Road; Singapore, Pacific Mail Steamship Company, 3 Robinson Road; Yokohama, Pacific Mail Steamship Company, 21 Yamashita-cho.

Officials: president, G. J. Baldwin; vice-president, G. C. Carson; general manager, Thomas A. Graham; operating manager, J. V. C. Comfort; port superintendent, Captain A. Martin; port engineer, A. E. Moncaster.

Operating the following privately-owned vessels, San Francisco to Baltimore, every three weeks: combns. Ecuador, 5544 gross, 395 long, 12½ speed; Colombia, 5644 gross, 395 long, 12½ speed; Venezuela, 5641 gross, 395 long, 12½ speed; frtrs. Point Adams, 2671 gross, 300 long, 10 speed; Point Bonita 2676 gross, 300 long, 10 speed; Point Judith, 2670 gross, 300 long, 10 speed; Point Lobos, 2671 gross, 300 long, 10 speed; San Francisco to Panama, every three weeks: combns. San Juan, 2152 gross, 296 long, 10 speed; Newport, 2643 gross, 348 long, 10 speed; Cuba, 3168 gross, 308 long, 11 speed; City of Para, 3404 gross, 360 long, 10 speed; various sailings, tkr. Solana, 6702 gross, 435 long, 10½ speed.

Operating the following Shipping Board vessels to Hongkong-Calcutta: twice a month from Hongkong: combns. Golden State, 14,123 gross, 535 long, 15½ speed; Empire State, 14,127 gross, 535 long, 15½ speed; Hoosier State, 14,187 gross, 535 long, 15½ speed; Creole State, 10,533 gross, 523 long, 13½ speed; Wolverine State, 10,533 gross, 523 long, 13½ speed; Granite State, 10,533 gross, 523 long, 13½ speed; frtrs. Lake Faulk, 2598 gross, 251 long, 9½ speed; Lake Fielding, 2571 gross, 251 long, 9½ speed; Lake Farmingdale, 2643 gross, 251 long, 9½ speed; Lake Gilpen, 2664 gross, 251 long, 9½ speed; Lake Gitano, 2664 gross, 251 long, 9½ speed; Caddopeak, 2865 gross, 289 long, 12 speed; Jacox, 2648 gross, 289 long, 10 speed; Doylestown, 2632 gross, 289 long, 12 speed.

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**Pacific Salvage Company, Ltd., 116 Pemberton building, Victoria, B. C.** British flag.

Officials: president, H. F. Bullen; operating manager, A. C. Burdick; marine superintendent, T. W. Allan.

Operating the following privately-owned vessels: salvage strs. Algerine, 592 gross, 185 long, 14½ speed; Lubro, 250 gross, 135 long, 10 speed; Alaskan, 180 gross, 80 long, 10 speed.

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**Pacific Steamship Company (The Admiral Line), L. C. Smith building, Seattle.** United States flag.

Agencies: Vancouver, A. B. Graham, 603 Hastings street; Seattle, L. L. Bates, 408 L. C. Smith building; Tacoma, F. J. Stapleton, 1111 Pacific avenue; Portland, M. F. Cropley, 101 Third street; Astoria, G. W. Sanborn & Sons; San Francisco, T. B. Watson, 112 Market street; Los Angeles, W. M. Cline, Citizens Bank building; Manila, J. B. Armstrong; Shanghai, G. A. Heyburn (Oriental manager); Kobe, E. F. Townsend; Yokohama, Don Tinling; Hongkong, H. T. Krull; Singapore, T. B. Wilson.

Officials: president, H. F. Alexander, Tacoma; vice-president and general manager, A. F. Haines, Seattle; freight traffic manager, M. J. Wright, Seattle; marine superintendent, A. J. Storrs, Pier B, Seattle; superintending engineer, J. D. Gilmour, Pier B, Seattle; foreign freight agent, L. L. Bates, Seattle; auditor, R. L. Betts, Seattle; general freight agent, C. E. Flye, Seattle; assistant general manager, H. C. Cantelow, Seattle; purchasing agent, A. R. Gardner, Seattle.

Operating the following privately-owned vessels, Puget Sound-California, every fourteen days: combn. strs. President, 5453 gross, 417 long, 16.3 speed; Admiral Schley, 2104 gross, 292 long, 13.5 speed; Admiral Dewey, 2104 gross, 292 long, 13.5 speed; Admiral Farragut, 2141 gross, 292 long, 13.5 speed; Queen, 2727 gross, 336 long, 14.5 speed; frt. str. Admiral Goodrich, 1419 gross, 230 long, 11.2 speed; Admiral Sebree, 2446 gross, 256 long, 9.3 speed; Portland-California, every 14 days: comb. strs. Admiral Evans, 2140 gross, 253 long, 12.5 speed; Senator, 2432 gross, 292 long, 11.3 speed; Curacao, 1548 gross, 258 long, 10.5 speed; Seattle-Alaska, every fourteen days: combn. strs. City of Seattle, 1958 gross, 258 long, 13.2 speed; Spokane, 2277 gross, 280 long, 13.3 speed; every twenty days: combn. strs. Admiral Watson, 2009 gross, 253 long, 12.5 speed; Admiral Rodman, 1101 gross, 187 long, 8 speed; San Francisco to San Luis Obispo, every six days: frt. str. Admiral Nicholson, 678 gross, 148 long, 7.5 speed; Seattle to Orient (laid up): frt. str. Admiral Mayo (M. S.), 1935 gross, 267 long, 6 speed.

Operating the following Shipping Board vessels, Seattle to Yokohama, Kobe, Shanghai, Hongkong and Manila, every fourteen days: combn. strs. Silver State, 11,340 deadweight, 535 long, 18 speed; Wenatchee, 11,400 deadweight, 535 long, 18 speed; Keystone State, 11,442 deadweight, 535 long, 18 speed; Pine Tree State, 11,500 deadweight, 535 long, 18 speed; Seattle to Yokohama, Kobe, Shanghai, every fourteen days: frt. strs. Eldridge, 10,019 deadweight, 415 long, 10 speed; Wheatland Montana, 9962 deadweight, 415 long, 10 speed; Edmore, 9962 deadweight, 415 long, 10 speed; City of Spokane, 9695 deadweight, 415 long, 10 speed; West Himrod, 8638 deadweight, 410 long, 11 speed; Manila to European berth, tramp service: frt. strs. West Kasson, 8300 deadweight, 410 long, 10 speed; West Nilus, 8800 deadweight, 410 long, 10 speed; Seattle to Europe, tramp service: frt str. Hanley, 11,900 deadweight, 440 long, 11 speed; Portland to Europe, tramp service: frt. str. Abercos, 9600 deadweight, 415 long, 10 speed; Portland to Yokohama, Kobe, Shanghai, sailing about every twenty-one days: frt. strs. Montague, 9600 deadweight, 415 long, 10 speed; Pawlet, 9600 deadweight, 415 long, 10 speed; Coaxet, 9600 deadweight, 415 long, 10 speed.

New vessel to be allocated: combn. str. Bay State, 11,500 gross, 535 long, 18 speed.

See also North Atlantic & Western.

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**Parr-McCormick Steamship Line, 1 Drumm street, San Francisco.** United States flag.

Officials: president, Fred D. Parr; operating manager, Fred D. Parr; marine superintendent, T. L. Tomlinson; port engineer, T. L. Tomlinson.

Operating the following privately-owned vessel, coastwise, sailings semi-monthly: frt. Daisy Freeman, 613.78 gross, 173 long.

☆ ☆ ☆

**Pope & Talbot, foot of Third street, San Francisco.** United States flag.

Officials: president, W. H. Talbot; vice-president, A. G. Harms; port engineer, J. F. Primrose.

Operating the following privately-owned vessel, San Francisco to Puget Sound, every two weeks: s. schr. Yosemite, 827 gross, 193 long, 9 speed.

☆ ☆ ☆

**Quadra Steamship Company, Limited, Britannia Beach, B. C.** British flag.

Agency: Tacoma, Steeb & Company.

Officials: president, W. J. Quigly; operating manager, E. J. Donohue; marine superintendent, M. F. Cutler; captain, M. F. Cutler.

Operating the following privately-owned vessel, Britannia Beach to Tacoma Smelter: steel str. Quadra, 683 gross, 174 long, 10 speed.

Capital stock of company is owned by Britannia Mining & Smelting Company, Limited. Vessel is used in carrying concentrates only in connection with mining operations of the Britannia Mining & Smelting Company, Limited. Mine is closed down at present so steamer is tied up at Esquimalt Harbor.

☆ ☆ ☆

**Red Salmon Canning Company, 73 Main street, San Francisco.** United States flag.

Officials: president and operating manager, Frank B. Peterson; vice-president, Ferd C. Peterson; operating manager, Frank B. Peterson.

Operating the following privately-owned vessels in own salmon canning business exclusively: barks St. Katherine, 1201 gross; Hecla, 1529 gross; str. Lehua, 176 gross; M.S. Margaret, 432 gross.

Lehua has been out of commission for two years. Other vessels make one trip to Alaska during summer; laid up in Oakland harbor remainder of year.

☆ ☆ ☆

**Redwood Steamship Company, 947 Monadnock building, San Francisco.** United States flag.

Officials: president, H. D. Mortenson; vice-president, Allen A. Curtis; operating manager, J. H. Holmes; secretary, S. R. Berman.

Operating the following privately-owned vessel, Eureka, San Francisco and Southern California ports, irregular sailings: s. schr. Katherine, 531 gross, 160 long.

☆ ☆ ☆

**Remco Steamship Company, 1600 Hobart building, San Francisco.** United States flag.

Officials: president, C. J. Wood; vice-president, C. E. DeCamp; operating manager, C. E. DeCamp; marine superintendent, C. E. DeCamp; port engineer, C. E. DeCamp.

Operating the following privately-owned vessel, Caspar to Pittsburg, California, every five days: str. Caspar, 648 gross, 175 long, 9 speed.

☆ ☆ ☆

**Rolph Navigation & Coal Company, 60 California street, San Francisco.** United States flag.

Officials: president, James Rolph, Jr.; vice-president, D. F. Ewart.

Operating the following privately-owned vessels, San Francisco to Portland, every two weeks: frt. strs. Annette Rolph, 2361 gross, 245 long, 11 speed; Georgina Rolph, 2354 gross, 245 long, 11 speed. Subject to charter, any trade: barks Annie M. Reid, 2165 gross, 291 long; Golden Gate, 2333 gross, 293 long; ship James Rolph, 2108 gross, 277 long; bktns. Annie M. Rolph, 1393 gross, 231 long; Edward May, 885 gross, 165 long; George U. Hind, 1389 gross, 231 long; Hesperian, 1385 gross, 231 long; Rolph, 1386 gross, 231 long; schr. Golden Shore, 699 gross, 185 long. Under construction for Rolph Shipbuilding Company: stm. schr. Elizabeth J. Rolph, 240 long.

☆ ☆ ☆

**The Royal Mail Steam Packet Company, Royal Mail House, London.** British flag.

Agencies: Vancouver, Pacific building; Seattle, Rainier building; Portland, Oregon-Pacific Company; Astoria, E. M. Cherry; San Francisco, 53 Post street; Los Angeles, C. J. Lehman; Victoria, B. C., Findlay, Durham & Brodie; chief office Pacific Coast, Seattle.

Officials: Pacific Coast manager, E. J. M. Nash; operating manager, K. G. Fisken; marine superintendent, N. M. K. Gilmour; passenger traffic, J. E. MacMaster.

Operating the following privately-owned vessels, Pacific Coast to Europe, every two weeks between Pacific Coast ports and Europe with large refrigerated space for perishable commodities: strs. Cardiganshire, 9500 gross, 500 long, 13 speed; Moliere, 8000 gross, 440 long, 12½ speed; Nebraska, 8500 gross, 450 long, 12½ speed; M.S. Somersetshire, 7500 gross, 450 long, 12½ speed; Loch Katrine, 9500 gross, 485 long, 13 speed; Loch Goil, 9500 gross, 485 long, 13 speed; Loch Monar, 9500 gross, 485 long, 13 speed.

See also Holland-America Line, with which R. M. S. P. maintains joint service.

☆ ☆ ☆

**The San Francisco & Portland Steamship Company, 673 Market street, San Francisco.** United States flag.

Agencies: Portland, C. F. Heywood, Ainsworth dock; Astoria, J. P. Tapscott.

Officials: president, C. R. Gray, Omaha, Nebraska; vice-president, J. P. O'Brien, Portland; operating manager, F. Schafer, San Francisco.

Operating the following privately-owned vessel, San Francisco to Portland, calling at Astoria, Oregon, every nine days: combn. str. Rose City, 3468 gross, 336 long, 15 speed.

☆ ☆ ☆

**San Juan Fishing & Packing Company, Seattle.** United States flag.

Officials: president, I. M. Calvert; vice-president, O. C. Spencer.

Operating the following privately-owned vessels, Seward, Alaska, to western ports as far as Unalaska in winter and to Nushagak in summer: str. Starr, 525 gross, 150 long, 10 speed.

☆ ☆ ☆

**Seaborn Sailers, 2504 L. C. Smith building, Seattle.** United States flag.

Agency: C. A. Mohrhardt, 915 Balfour building, San Francisco.

Operating the following privately-owned vessels: schrs. Meteor, 600 gross, 177 long; Mindanao, 566 gross, 164 long; Spokane, 675 gross, 181 long; Sophie Christenson, 639 gross, 183 long; Camano, 730 gross, 185 long.

☆ ☆ ☆

**R. S. Silva & Company, general agents, Latin America Line, 101 Front street, San Francisco.** Norwegian flag.

Agencies: Seattle, Universal Shipping & Trading Company, Alaska building; Portland, Northwest Shipping Company, Henry building; Los Angeles, D. W. Ferguson Company, 751 South Spring street; Vancouver, B. L. Johnson, Walton & Company, 850 Hastings street West.

Officials: president, R. S. Silva; vice-president, George E. Bennett; operating manager, R. S. Silva; port engineer, Ph. Svendsen.

Operating the following privately-owned vessels, Mexico, Central and South America, every four weeks: frt. strs. Baja California, 2550 gross, 10-11 speed; Sinaloa, 2550 gross, 10-11 speed; South America, every four weeks: frt. strs. Romulus, 7000 gross, 10-12 speed; Remus, 7300 gross, 10-12 speed; Regulus, 6000 gross, 10-11 speed.

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**Societe Generale de Transports Maritimes a Vapeur, Marseilles, France.** French flag.

Agencies: general agents Pacific Coast, Norton, Lilly & Company; Vancouver, B. W. Greer & Son, Ltd., Bank of Nova Scotia building and Norton, Lilly & Company as follows: Seattle, Alaska building; Portland, Yeon building; San Francisco, American National Bank building; Los Angeles, Van Nuys building; San Diego, Spreckels building.

Operating the following privately-owned vessels, Pacific Coast ports to Marseilles, Genoa, North Coast of Africa, with transshipment at Marseilles to all Mediterranean ports, bi-monthly sailings: frt strs., about 10 speed, Mont Cenis, 4617 gross, 365 long; Mont Cervin, 3563 gross, 340 long.

And British-flag vessels, same service, frt. strs., about 10 speed, Mount Etna, 4277 gross, 380 long; Mount Berwyn, 5241 gross, 400 long.

☆ ☆ ☆

**Standard Oil Company of California, 200 Bush street, San Francisco.** United States flag.

Agencies: Seattle, Marine Department, Standard Oil Company of California; San Pedro, Marine Department, Standard Oil Company of California.

Officials: manager Marine Department, J. C. Rohlfs; assistant manager Marine Department, C. H. Robertson.

Operating the following privately-owned vessels in own oil trade: stm. tankers F. H. Hillman, 9835 gross, 500 long, 10.5 speed; H. M. Storey, 500 long, 10.5 speed; W. S. Rheem, 500 long, 10.5 speed; H. T. Harper (M.S.), 320 long, 11 speed; K. R. Kingsbury, 7252 gross, 439 long, 11 speed; D. G. Scofield, 8597 gross, 439 long, 11 speed; R. J. Hanna, 7096 gross, 435 long, 10.5 speed; W. S. Miller, 6984 gross, 435 long, 10.5 speed; Moffett, 6521 gross, 420 long, 10.5 speed; Richmond, 6445 gross, 420 long, 10.5 speed; S. C. T. Dodd, 7054 gross, 425 long, 10.5 speed; Capt. A. F. Lucas, 4188 gross, 360 long, 10 speed; Col. E. L. Drake, 4205 gross, 360 long, 10 speed; El Segundo, 3664 gross, 320 long, 10 speed; Charlie Watson (M.S.), 1770 gross, 250 long, 10 speed; Atlas, 2005 gross, 248 long, 10 speed; barges S. O. Co. No. 95, 4167 gross, 360 long; S. O. Co. No. 93, 2473 gross, 280 long; S. O. Co. No. 91, 2019 gross, 246 long.

☆ ☆ ☆

**Struthers & Barry (formerly Struthers & Dixon), 343 Sansome street, San Francisco.** United States flag.

Agencies: San Francisco, Struthers & Barry, 343 Sansome street; Los Angeles, McMullen, Wheaton & Kruger, Pacific Electric building; Yokohama and Kobe, Walton & Watson; Shanghai, Hongkong, Manila, Struthers & Barry.

Officials: Harry R. Struthers and F. M. Barry, partners; operating manager, F. M. Barry; general freight agent, F. F. Allen; port engineer, Phil Sheridan.

Operating Shipping Board vessels, twenty-day sailings from San Francisco and Los Angeles to Yokohama, Kobe, Shanghai, Hongkong, Manila; Dairen (if cargo offers): frt. strs. Apus, 6094 gross, 401 long, 11½ speed; West Carmona, 5645 gross, 410 long, 10 speed; West Jena, 5866 gross, 410 long, 10 speed; sisters West Prospect, West Chopaka, West Faralon, 7600 gross, 544 long, 11½ speed.

☆ ☆ ☆

**Sudden & Christenson, 110 Market street, San Francisco.** United States flag.

Agencies: Portland, 1115 Board of Trade building; San Francisco, 110 Market street; Los Angeles, Los Angeles Trust & Savings building; New York City, 44 Whitehall street.

Officials: president, E. A. Christenson; vice-president, D. W. Rasor; secretary and treasurer, A. B. Cahill; port engineer, J. W. Pendergast; port steward, H. J. Fraser.

Operating the following privately-owned vessels, coastwise, irregular sailings: frt. strs. Brooklyn, 333 gross, 137 long, 7½ speed; Caoba, 683.57 gross, 175 long, 8 speed; Carmel, 633.02 gross, 170 long, 8½ speed; Chas. Christenson, 839 gross, 189 long, 8½ speed; Chehalis, 663 gross, 183 long, 9.5 speed; Edna, 1815.07 gross, 267 long, 10 speed; Grays Harbor, 659.91 gross, 172 long, 8½ speed; Raymond, 595.51 gross, 182 long, 8 speed; Catherine G. Sudden, 2009 gross, 295 long, 10½ speed.

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**Swayne & Hoyt, Inc., Steamship Agents, 430 Sansome street, San Francisco.** United States flag.

Agencies: Seattle, A. M. Gillespie, Inc., 713 Arctic building; Portland, A. M. Gillespie, Inc., Board of Trade building; Los Angeles, Swayne & Hoyt, 794 Pacific Electric building.

Officials: president, R. H. Swayne, vice-presidents, John G. Hoyt and Lloyd Swayne; operating manager, Charles E. Brown; marine superintendent, Captain J. S. Gade; port engineer, H. F. Gelhaus; port steward, George Kenny.

Operating the following privately-owned vessels, Pacific-Caribbean & Gulf Line, Pacific Coast ports, San Francisco to Puget Sound, Los Angeles to Gulf ports, New Orleans via Panama Canal, East Coast Mexican ports, West Indies, Colombian ports and return, sailings every month: strs. Alvarado, 2053 gross, 245 long, 8-9 speed; Eldorado, 2180 gross, 245 long, 9¼ speed; Iris, 2858 gross, 304 long, 9 speed; San Francisco to Coos Bay points, Columbia River and Los Angeles: wood str. Yellowstone, 767 gross, 186 long, 8 speed.

Operating the following Shipping Board vessels, Pacific-Argentine-Brazil Line, San Francisco, Puget Sound and Los Angeles to East Coast of South America, Porto Rico via Panama Canal and/or Straits of Magellan and return, calling Ponce, San Juan, P. R., Para, Pernambuco, Bahia, Rio de Janeiro, Santos (Brazil), Montevideo (Uruguay), Buenos Aires, Rosario, Bahia, Blanca, La Plata (Argentine), Punta Arenas (Chile): strs. Pallas, 4839 gross, 386 long, 9½ speed; Rotarian, 4839 gross, 386 long, 9½ speed; West Notus, 5652 gross, 427 long, 9½ speed.

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**A. F. Thane & Company, 311 California street, San Francisco.** United States flag.

Agencies: Shanghai, Kobe, Sydney.

Officials: president, Hanford E. Finney; operating manager, W. H. Neunaber.

Operating the following privately-owned vessels, Pacific Ocean trading, all used principally in company's own lumber trade: bktn. Echo, 707 gross, 183 long; schr. Alumna, 696 gross, 189 long; aux. M.S. Oronite, 1704 gross, 232 long, 6 speed.

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**Thorndyke - Trenholme Company, Inc., Seattle.** United States flag.

Agencies: Portland, A. C. Callan, Oregon building; London, Frederick Tillett & Company, 101 Leadenhall street, E. C. 3.

Officials: George F. Thorndyke; vice-president, G. M. Starr; marine superintendent, F. D. Crane.

Operating the following Shipping Board vessels, Puget Sound to United Kingdom and/or Continent, grain, tramp service: strs. Westward Ho, 5814 gross, 411 long, 10 speed; Jalapa, 6085 gross, 10 speed; chartered to bring cargo coal from East Coast to Puget Sound: str. West Cahokia, 10 speed.

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**Toyo Kisen Kaisha (Oriental Steamship Company), Tokyo, Japan.** Japanese flag.

Agencies: Portland, Oregon Pacific Company, Wilcox building; San Francisco, 625 Market street; Los Angeles, S. L. Kreider, Pacific Electric building; Yokohama, Toyo Kisen Kaisha, No. 5 Yamashita-cho; Kobe, T. K. K.; Honolulu, T. K. K.; Shanghai, T. K. K.; Hongkong, T. K. K.; Manila, T. K. K..

Officials: president Soichiro Asano; manager San Francisco office, Keikichi Doi.

Operating the following privately-owned vessels, San Francisco to Orient, weekly sailings: comb. strs. Taiyo Maru, 14,503 gross, 560 long, 20 speed; Shinyo Maru, 13,039 gross, 558 long, 21 speed; Tenyo Maru, 13,398 gross; 558 long, 21 speed; Korea Maru, 11,809 gross, 552 long, 19 speed; Siberia Maru, 11,785 gross, 552 long, 19 speed; Persia Maru, 4380 gross, 430 long, 17 speed; San Francisco to South America and Orient, monthly sailings: comb. strs. Anyo Maru, 9256 gross, 460 long, 15 speed; Kiyo Maru, 6056 gross, 470 long, 15 speed; Seiyo Maru, 6547 gross, 405 long, 14 speed; Rakuyo Maru, 9418 gross, 445 long, 15 speed; Ginyo Maru, 8600 gross, 445 long, 15 speed; San Francisco to South America and Atlantic ports in United States, monthly sailings: frt strs. Koyo Maru, 5471 gross, 400 long, 13 speed; Choyo Maru, 5455 gross, 400 long, 13 speed; Meiyo Maru, 5434 gross, 400 long, 13 speed; Hayo Maru, 5445 gross, 400 long, 13 speed; Reiyo Maru, 5463 gross, 400 long, 13 speed; Fukuyo Maru, 5463 gross, 400 long, 13 speed; Biyo Maru, 5450 gross, 400 long, 13 speed; Woyo Maru, 5450 gross, 400 long, 13 speed.

Vessels under construction: combn.

str. Bokuyo Maru, about 9000 gross, 445 long, 15 speed; frt. str. Soyo Maru, about 5500 gross, 400 long, 13 speed.

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**Trans-Oceanic Company, 324 Sansome street, San Francisco** (agents Compagnie Generale Transatlantique). French flag.

Agencies: Vancouver, Empire Shipping Company, Board of Trade building; Seattle, Colman building; Portland, Railway Exchange building; San Francisco, 324 Sansome street; Los Angeles, McCormick & McPherson, Merchants National Bank building.

Officials: president, H. S. Scott; vice-president, Drew Chidester; operating manager, A. T. Hunter; port engineer, D. Dorward, Jr.

Operating the following privately-owned frt. strs., United States Pacific Coast to Europe, monthly sailings: Honduras, 5903 gross, 405 long, 9½ speed; Mississippi, 6687 gross, 427 long, 9½ speed; St. Joseph, 5796 gross, 418 long, 9½ speed; Texas, 6674 gross, 429 long, 9½ speed; Montana, 5248 gross, 431 long, 9½ speed.

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**Union Fish Company, 141 Clay street, San Francisco.** United States flag.

Officials: president, C. P. Hale; vice-president, C. E. Cocks; secretary, C. I. Sturrock; treasurer, C. I. Sturrock.

Operating the following privately-owned vessels, San Francisco to Alaska, twice a year: gas schr. Golden State, 353 gross, 128 long, 6 speed; schrs. Louise, 345 gross, 150 long; Galilee, 354.07 gross, 132 long; Beulah, 356.96 gross, 146 long.

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**Union Oil Company of California, Union Oil building, Los Angeles.** United States flag.

Agencies: Vancouver, 505 Metropolitan building; Seattle, 3300 Railroad avenue; Portland, Yeon building; San Francisco, Mills building; Los Angeles, Union Oil building.

Officials: president, W. L. Stewart; vice-president, E. W. Clark; operating manager, Max H. Dyer; marine superintendent, Edward Bugge; port engineer, Albert O. Pegg; purchasing agent, F. M. Berry.

Operating the following privately-owned vessels, Pacific coastwise, irregular: steam tankers Coalinga, 7388 gross, 471 long, 10½ speed; La Brea, 6900 gross, 435 long, 11 speed; Lansing, 4561 gross, 400 long, 10½ speed; La Placentia, 8272 gross, 457 long, 11 speed; La Purisima, 5213 gross, 407 long, 11 speed; Los Angeles, 6875 gross, 435 long, 11 speed; Lyman Stewart, 6055 gross, 408 long, 10½ speed; Montebello, 8272 gross, 457 long, 11 speed; Oleum, 2998 gross, 293 long, 10 speed; Washtenaw, 2897 gross, 315 long, 10 speed; Whittier, 1296 gross, 240 long, 10½ speed; barges Fullerton, 1554 gross, 235 long; Simla, 2237 gross, 278 long; E. M. Phelps, 3030 gross, 312 long.

Following tankers chartered by and operated by company or being built by company, and respective flags: Pacific coastwise, irregular, Norwegian flag: La Habra, 7021 gross, 424 long, 10½ speed; San Joaquin, 7118 gross, 425 long, 10½ speed; British flag, Lompoc, 7270 gross, 435 long, 10½ speed; under construction, Scotland, Santa Maria, 475 long, 11½ speed.

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**Union Steamship Company of British Columbia, Ltd., foot of Carrall street, Vancouver, B. C.** British flag.

Agencies: Vancouver, head office; Tacoma, Steeb & Company. Victoria, Geo. McGregor, Belmont House; Prince Rupert, J. Barnsley; Liverpool, Eng., J. H. Welsford & Company, Ltd.

Officials: president, Grange V. Holt; managing director, R. A. H. Welsford; manager, John Barnsley; port engineer, A. DeGruchy.

Operating the following privately-owned vessels, trading N. B. C. coast: combn. strs. Camosun, 1369 gross, 192 long, 14 speed; Chelohsin, 1133 gross, 175 long, 14 speed; Venture, 1011 gross, 180 long, 13 speed; Cowichan, 961 gross, 156 long, 11 speed; Howe Sound route: combn. Cheam, 761 gross, 159 long, 11 speed; trading B. C. coast, San Francisco-Alaska: frt. str. Chilkoot, 756 gross, 172 long, 12 speed; trading B. C. coast: combn. str. Cheakamus, 688 gross, 145 long, 11 speed; frt. str. Cassiar, 597 gross, 120 long, 10 speed; trading B. C. coast, San Francisco-Alaska: frt. str. Chilliwack, 557 gross, 170 long, 10 speed; Howe Sound route: combn. str. Capilano, 374 gross, 135 long, 14½ speed; trading B. C. coast: combn. strs. Chilco, 309 gross, 151 long, 13 speed; Chasina, 258 gross, 161 long, 13 speed; trading N. B. C. coast: frt. str. Coquitlan, 256 gross, 120 long, 9 speed.

Royal Mail steamers to all northern British Columbia ports for the Dominion government of Canada; connecting line with the Pacific Great Eastern Railway at Squamish (Howe Sound); connecting line with the Canadian National Railway (Grand Trunk Pacific) at Prince Rupert; calls made according to regular schedule at all British Columbia ports between Vancouver and Alaska; calls at all logging camps and canneries; regular service to Powell River, Alert Bay, Namu, Ocean Falls, Bella Coola, Swanson Bay, Prince Rupert, Anyox, Alice Arm and all intermediate ports and landings; operation of regular summer service to Bowen Island and Howe Sound, and all interests of the late Terminal Steam Navigation Company acquired by this company in 1920; regular weekly freight service to all Northern British Columbia ports, also San Francisco, Puget Sound, Alaska, by special arrangement. Steamers Capilano and Chilkoot were completed in 1920.

**Union Steamship Company of New Zealand, Ltd., Dunedin, New Zealand.** British flag.

Agencies: Vancouver, J. C. Irons; Seattle, J. C. Irons; Portland, J. C. Irons; San Francisco and Los Angeles, Hind, Rolph & Company.

Operating the following privately-owned vessels, San Francisco to New Zealand, Australia and South Seas, every four weeks: combn. strs. Tahiti, 7585 gross, 460 long, 19 speed; Marama, 6497 gross, 440 long, 17 speed; San Francisco to New Zealand and Australia, every four weeks: frt. strs. Wairuna, 5832 gross, 420 long, 12 speed; Waikawa, 5677 gross, 420 long, 12 speed; Waitemata, 5677 gross, 420 long, 12 speed; Waihemo, 5677 gross, 420 long, 12 speed; Waiotapu, 5677 gross, 420 long, 12 speed.

For Vancouver service see Canadian-Australasian Steamship Line.

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**United American Lines, Inc. (American-Hawaiian Steamship Company), 39 Broadway, New York City.** United States flag.

Agencies: Seattle, W. C. Dawson & Company, Mutual Life building; Tacoma, see Seattle; Portland, Columbia-Pacific Shipping Company, Board of Trade building; San Francisco, Williams, Dimond & Company, general Pacific Coast agents, 310 Sansome street; Los Angeles, McCormick & McPherson, Merchants' National Bank building.

Officials: president, R. H. M. Robinson; vice-president, E. C. Tobey; operating manager, E. C. Tobey; marine superintendent, Captain F. J. Bennett; port engineer, B. Mills.

Operating the following privately-owned vessels of American-Hawaiian Steamship Company in trades touching Pacific ports: 1. New York, Boston, Philadelphia, to Los Angeles, San Francisco, Seattle, Tacoma, Portland; fortnightly sailings from Pacific Coast. 2. Pacific ports to principal ports of United Kingdom and Continent; fortnightly direct sailings. One vessel a week is dispatched from New York to Pacific ports; vessels load also at Philadelphia and Boston alternately, giving these ports fortnightly service; from Pacific Coast alternate steamers return to Boston and New York and alternate steamers to Liverpool, London, Hamburg, Antwerp, also optional calls at Havre, Rotterdam, Glasgow, as cargo offers; thence they return to Boston or Philadelphia, thence to New York, and westbound in intercoastal service. Fleets of American-Hawaiian, Coastwise Steamship Company and Shawmut Steamship Company (all United American Lines): strs. Alaskan, 8617 gross, 484 long, 10½ speed; American, 5600 gross, 430 long, 9¾ speed; Arizonan, 8534 gross, 484 long, 10¾ speed; Dakotan, 6501 gross, 429 long, 11¾ speed; Floridian, 6784 gross, 429 long, 11¾ speed; Hawaiian, 5670 gross, 430 long, 9¾ speed; Iowan, 6547 gross, 429 long, 11¾ speed; Kentuckian, 6432 gross, 429 long, 11 speed; Mexican, 8414 gross, 488 long, 11½ speed; Minnesotan, 6548 gross, 429 long, 11¾ speed; Ohioan, 6649 gross, 429 long, 12 speed; Oregonian, 5648 gross, 430 long, 10½ speed; Panaman, 6499 gross, 429 long, 12 speed; Pennsylvanian, 6499 gross, 429 long, 12½ speed; Texan, 8615 gross, 484 long, 11½ speed; Virginian, 7914 gross, 501 long, 11½ speed; Ipswich, 6214 gross, 417 long, 9 speed; Mystic, 6214 gross, 417 long, 9 speed; Sudbury, 5075 gross, 402 long, 9 speed; Fairmont, 5401 gross, 368 long; Hampden, 4725 gross, 369 long; Franklin, 5266 gross, 368 long; Middlesex, 4727 gross, 369 long; Transportation, 4015 gross, 359 long; Suffolk, 4718 gross, 365 long. Under construction: frt. M.S. Californian and Missourian, 11,000 D.W.T., 461 long, 11.5 speed.

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**United States Army Transport Service, Fort Mason, San Francisco.** United States flag.

Officials: general superintendent, John T. Knight, Col. Q. M. C.; assistant general superintendent, A. W. Yates, Col. Q. M. C.; marine superintendent, W. P. Stinson; port engineer, K. G. Lister.

Operating Army transports as follows, San Francisco to Honolulu, every three months: combn. vessel, U. S. A. T. Buford, 4805 gross, 370 long, 11 speed; San Francisco to Manila, via Honolulu and Guam, every three months: combn. vessels Thomas, 7685 gross, 445 long, 12 speed; Sherman, 7580 gross, 445 long, 12 speed; Logan, 7519 gross, 445 long, 12 speed; San Francisco to Manila via Honolulu, every four months: frt. Dix, 7212 gross, 436 long, 10 speed; out of commission: combn. Sheridan, 7496 gross, 445 long, 12 speed.

Vessels transport officers and men of Army, Navy and Marine Corps and government supplies to and from insular possessions. No commercial passengers or freight are carried.

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**United States Navy (Naval Transportation Service), Navy Department, Washington, D. C. (Office of Naval Operations).** United States flag.

Official: port director, U. S. Naval Transportation Service, San Francisco, 311 Custom House.

Operating U. S. Navy vessels as follows, San Francisco to Honolulu, Guam and Cavite, three round trips yearly: transports Houston, 4525 gross, 392 long, 10 speed; Newport News, 3537 gross, 371 long, 13 speed; Pensacola, 3974 gross, 339 long, 10 speed.

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**United States Shipping Board, Pacific Coast District, 369 Pine street, San Francisco.** United States flag.

Officials: district director, Frank W. Relyea; executive assistant, Walter Mohns; operating manager, William Kincaid; assistant operating manager, Edward Fox, Jr.; manager traffic department, W. M. Minor; assistant manager traffic department, R. Gardner; conference secretary, J. H. Todd; port superintendent, R. H. Gonzel; manager of maintenance and repairs, William Chisholm; comptroller, C. H. Georg; disbursing officer, J. H. Dranga.

At the middle of December companies were operating Shipping Board tonnage under the Pacific Coast district as follows: Columbia Pacific Shipping Company, seven vessels Oriental service; General Steamship Corporation, three vessels West Coast service and three Australian service; Matson Navigation Company, two 535-type vessels Atlantic-Pacific-Hawaii service; Pacific Steamship Company, one vessel Oriental service; Pacific Mail Steamship Company, eight vessels Oriental feeder service, three 535-type vessels Oriental service, three 502-type vessels Oriental service; Struthers & Barry, six vessels Oriental service, one tramp; Swayne & Hoyt, three vessels Pacific-River Plate service; Williams, Dimond & Company, two vessels European-Pacific service. For more detailed data regarding these companies see their individual listings.

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**United States Shipping Board, Puget Sound District, Securities building, Seattle.** United States flag.

Officials: district director, R. M. Semmes; executive assistant and acting manager operating department, Lee F. Root; manager traffic department and in charge of purchases, F. B. Wurzbacher; chief supervisor and in charge of office supervising and statistical work, Phillip Nyren.

At the middle of December companies were operating Shipping Board tonnage under the Puget Sound District as follows: Pacific Steamship Company, seven vessels, Oriental berth service, five in Oriental feeder service, five 535-type vessels and two vessels under bareboat charter to Europe; Thorndyke-Trenholme Company, two vessels; Frank Waterhouse & Company, three vessels; Struthers & Dixon (now Struthers & Barry), one. The Pacific Steamship Company will be made the only operator out of Puget Sound. For more detailed data regarding these companies see their individual listings.

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**Universal Shipping & Trading Company, 520 Alaska building, Seattle.** United States flag.

Officials: president, H. H. Hammer; vice-president, A. Matthew; operating manager, A. Matthew; marine superintendent, Captain C. T. Larsen; port engineer, M. McGinitie.

Operating the following privately-owned vessels, tramp service: wood schrs. Bianca, 2139 gross, 243 long; Commodore, 1526 gross, 232 long.

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**The Vaquero Line, 520 Metropolitan building, Los Angeles.** United States flag.

Official: general manager, C. P. Visel.

Operating the following privately-owned vessels, San Pedro to Santa Barbara, Ventura, Hueneme and San Diego, sufficiently frequent to connect all ports of call with intercoastal vessels at San Pedro: frt. M.S. Vaquero, 243 gross, 141 long, 9 speed. Feeder line connecting with intercoastal service at Los Angeles harbor.

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**Frank Waterhouse & Company, Central building, Seattle.** United States flag.

Agencies: Vancouver, Rogers building; Tacoma, Perkins building; Portland, Lewis building; Manila, Kobe, Yokohama, Hongkong, Shanghai.

Officials: president, Frank Waterhouse; vice-president, W. D. Benson; marine superintendent, Captain John Jordison; treasurer, R. D. Smalley; secretary, John Sparling.

Operating the following Shipping Board vessels, Puget Sound to Orient, monthly sailings: frt. strs. West Jester, 5866 gross, 410 long, 10 speed; West Ivan, 5587 gross, 410 long, 10 speed; West Jessup, 5857 gross, 410 long, 10 speed; West Jappa, 5866 gross, 410 long, 10 speed.

Also agents for Furness Prince Line (Furness, Withy & Company), which see.

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**Western Whaling & Trading Company, 913 First National Bank building, San Francisco.** United States flag.

Officials: president, Rudolph Spreckels; vice-president, J. F. Judge; operating manager, L. L. Lane.

Operating the following privately-owned vessel, whaling and trading, operating off Alaska and Mexico: aux. schr. Carolyn Frances, 570 gross, 116 long, 7 speed.

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**Williams, Dimond & Company,** agents for the American-Hawaiian Steamship Company; see United American Lines.

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**Williams Steamship Company, Inc., International Commerce building, Moore and Water streets, New York City.** United States flag.

Agencies: Seattle, Alaska Steamship Company, Pier 2; Tacoma, Alaska Steamship Company, Rust building; Portland, A. C. Callan, Oregon building; Astoria, A. C. Callan, Portland; San Francisco, J. W. Chapman, 110 California street, Pacific Coast manager; Los Angeles, S. L. Kreider, 375 Pacific Electric building.

Officials: president, George T. Williams; vice-president, Hammond Talbot.

Operating the following privately-owned vessels between New York, Philadelphia, Baltimore, Norfolk and San Francisco, Seattle, Tacoma, Portland, Astoria, Oakland and Los Angeles, via Panama Canal, every fifteen days: frt. strs. Willsolo, 5816 gross, 450 long, 10½ speed; Willhilo, 5816 gross, 450 long, 10½ speed; Willfaro, 5313 gross, 389 long, 10 speed; Willpolo, 5313 gross, 389 long, 10 speed; Kennecott (M. S.), owned by Alaska Steamship Company but chartered by the Williams Line, 3620 gross, 360 long, 11½ speed.

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**Wilson Brothers & Company, 110 Market street, San Francisco.** United States flag.

Agency: Grays Harbor, Wilson Brothers & Company.

Officials: president, Henry Wilson; vice-president, W. T. Wilson; operating manager, F. A. Wilson.

Operating the following privately-owned vessels, American-Pacific Coast lumber trades, every two weeks: stm. schrs. Svea, 618 gross, 174 long, 10 speed; Oregon, 989 gross, 201 long, 10 speed; Idaho, 1057 gross, 206 long, 10 speed.

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**E. K. Wood Lumber Company, 1 Drumm street, San Francisco.** United States flag.

Agencies: Portland, E. K. W. L. Co.; Grays Harbor, E. K. W. L. Co.; Los Angeles, E. K. W. L. Co.

Officials: president, F. J. Wood; vice-presidents, W. T. Wood and U. G. Richards; marine superintendent, H. P. Hansen; secretary and treasurer, C. A. Thayer; assistant secretary and treasurer, R. H. Thayer.

Operating the following privately-owned vessels, coastwise lumber trade: M.S. Lassen, 717 gross, 170 long, 9 speed; Sierra, 1034 gross, 210 long, 8 speed; stm. schrs. San Jacinto, 614 gross, 158 long, 8½ speed; Shasta, 878 gross, 195 long, 8 speed; Siskiyou, 884 gross, 205 long, 10 speed; Tamalpais, 574 gross, 175 long, 10 speed.

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**Yamashita Kisen Kaisha, Kobe, Japan.** Japanese flag.

Agencies: Vancouver, Dominion Shipping Company; Seattle, A. M. Gillespie, Inc.; Portland, A. M. Gillespie, Inc.; San Francisco, Frank K. Hitching; Los Angeles, S. L. Kreider.

Operating the following privately-owned vessels, San Francisco to Australia and New Zealand, every four weeks: strs. Yoshida Maru No. 1, 5425 gross, 400 long, 10 speed; Yoshida Maru No. 3, 4646 gross, 360 long, 9 speed; Yehime Maru, 4654 gross, 360 long, 9 speed; Nichiyo Maru, 3370 gross, 331 long, 8.5 speed; Komagata Maru, 2962 gross, 330 long, 9 speed; Togo Maru, 3107 gross, 322 long, 9.5 speed; Canton Maru, 2566 gross, 300 long, 8 speed; Yechigo Maru, 2658 gross, 299 long, 9 speed; Toyotomi Maru, 2338 gross, 309 long, 10 speed; Fuzan Maru, 2413 gross, 296 long, 8.5 speed; Akebono Maru, 2324 gross, 300 long, 9 speed; Chukwa Maru, 2191 gross, 280 long, 9.7 speed; Kwanan Maru, 2192 gross, 280 long, 10 speed; Taikwa Maru, 2197 gross, 280 long, 9.5 speed; Heiwa Maru, 1993 gross, 270 long, 7.5 speed; Hozui Maru, 1816 gross, 260 long, 8.5 speed; I. Nanyo Maru, 1274 gross, 200 long, 9.5 speed.

# WHAT'S IN A NAME?

IN the entire world of shipping there are few subjects at once so interesting and obscure as the systems of nomenclature employed by different owners of vessels. A vast number of craft, of course, are like Chief Sitting Bull: their family connections never would be guessed from their names; but, on the whole, many more companies than is generally supposed employ uniform and distinctive systems. They do so for much the same reason that individuals have family names; in some cases, when the shipowner has been so fortunate as to hit upon a happy idea, he may receive great benefit in a business way from the advertising thus afforded. On both the Atlantic and Pacific Oceans, for example, the word "Empress" has become synonymous with Canadian Pacific Steamships, Limited, just as Ford has with automobile.

Most persons interested in deep-water vessels are aware that the Cunard Line always gives its vessels names ending in "ia" and, with only one or two exceptions, the most recent of which is the Berengaria, has chosen names of provinces of the Roman Empire. Likewise the White Star system is quite as distinctive, consisting as it does of the letters "ic," the names of vessels usually being adjectival, as Olympic, Britannic. But apart from the White Star and Cunard there are really few naming systems that are world-known, as familiar to an inlander as to a mariner, although there is more than one plan that is even more patent than those cited.

Take, for example, such British fleets as the Prince, Clan and others. The names Belgian Prince and Chinese Prince, Clan Matheson and Clan Macaulay, immediately engage the attention; as do Steelmaker and Steel Mariner, or Canadian Reaper and Canadian Rover. Such instances might be multiplied almost endlessly, yet, due to the fact that most of the world's merchant marine is composed of freighters, these systems never command attention from persons who ignore vessels of less than 30,000 gross tons.

Even shipping men often are ignorant of the peculiar plans followed by different companies. Much specialized information would be needed to unravel a good number. For example, the Shell tankers of British registry are named after shells, each vessel carrying in its cabin a handsomely encased specimen of the shell after which it is named; but there are not many men sufficiently versed in conchology to penetrate the system at a glance. So with some of the vessels of Erik Broden: every mariner would know whence such names as Altair, Arcturus, Aldebaran, Antares and Aries were derived; there's many a man ashore who does not know whether Arcturus is the title of the latest motion-picture or of some Roman general.

Knowledge of a highly localized nature would be needed for other systems. How many Americans could say off-hand whence come such names as Fushimi Maru and Suwa Maru of the Nippon Yusen Kaisha, or Maui and Manoa of the Matson Navigation Company? Or who could explain readily the significance of the terminal "dijk" of Holland-America names, or the derivation of names of vessels of the Union Steamship Company of New Zealand?

In what follows an attempt has been made to give in necessary detail an outline of the plans followed by different companies operating vessels to and from the Pacific Coast of the United States and Canada. When a line has adopted no system that fact generally has not been noted, although in a few cases, such as that of the Osaka Shosen Kaisha, some attention is paid to interesting tendencies.

**American-Hawaiian Steamship Company** (United American Lines)—Vessels bear the names of states and territories with the suffix "an" or "n"; Alaskan, Floridian, Kentuckian; and there are others that do not altogether fall within this system: Mexican, Panaman, American. These vessels of the old Coastwise Transportation Company are being re-named as follows: Clarksburg to be Georgian, Fairmont to be Nebraskan, Franklin to be Nevadan. In renaming these vessels and in christening its two new motorships Californian and Missourian the company is perpetuating the names of older steamships.

**Associated Oil Company** — Names of officials of the corporation are used; examples: Frank G. Drum, Wm. F. Herrin. There are three small vessels that do not follow this system: Arabs, Midway, Santiago.

**J. H. Baxter & Company** — Both vessels owned by the company have the Baxter surname: Fred Baxter, Horace X. Baxter; but this system would not necessarily be followed in the naming of vessels acquired in the future.

**Blue Funnel Line**—Characters of Homeric or other classic Greek myths have given their names to vessels of the Holt companies, both masculine and feminine names appearing: Achilles, Atreus, Agamemnon, Hector; Atalanta, Medusa, Circe. The system is unusually distinctive, but, it must be confessed, abounds with names difficult of pronunciation, as Eurypylus and Protesilaus. The China Mutual Steam Navigation Company has some vessels with Chinese names, as Pak Ling and Yang-tsze, and both it and the Ocean Steamship Company have such names as Knight of the Garter, Knight Companion. The prevailing tone, however, is decidedly classic Greek.

**Canadian Government Merchant Marine**—All names are composed of the adjective Canadian followed by a noun: Canadian Adventurer, Canadian Miner. With few exceptions, such as Canadian Recruit, Canadian Scottish, all the nouns end with the letter "R"; this latter feature is a part of the system.

**Canadian National Railways, Steamship Department** (Grand Trunk Pacific Coast Steamship Company)—Christian names preceded by the title Prince: Prince Rupert, Prince George.

**Canadian Pacific Railway Company**—The company's larger vessels are all "Princesses": Princess Louise, Princess Charlotte.

**Canadian Pacific Steamships, Limited**—In addition to the world-known Empress system: Empress of Russia, Empress of China, the company has the additional systems of giving its passenger vessels other than those of the Empress class names beginning with the letter "M": Monteagle, Methven; and its freight vessels names beginning with the letter "B": Bosworth, Bothwell. There are some exceptions to all the systems: Dunbridge, Holbrook.

**Compagnie Generale Transatlantique (French Line)**—Geographical names are largely employed, as the names of cities, provinces, states, countries, etc.; examples: Chicago, La Navarre, Alabama, Venezuela. There are several exceptions.

**Coos Bay Lumber Company** — All craft ever owned by the company have had names of persons of the surname Smith; examples: C. A. Smith, Johanna Smith.

**The Robert Dollar Company**—All steamships are named for members of the Dollar family: Robert Dollar, Harold Dollar, M. S. Dollar. Some sailing vessels are exceptions: John Ena.

**The East Asiatic Company** — This line has no distinctive system, but it is worth noting that names of countries are favored; examples: Afrika, Java, Jutlandia, Malaya, Peru.

**Ellerman's Wilson Line** — Vessels of the Ellerman & Bucknall Steamship Company, City Line, employ "City of" preceding the name of a city, as City of Benares, City of York; the Hall Line names end with "Hall," as Branksome Hall, Crosby Hall, although a large number of "City" vessels also are included in this line. Vessels of Ellerman's Wilson Line proper generally end in "O", but no information is available as to the plan followed; examples: Aleppo, Claro, Leo, Tasso.

**Forest Line** — As the company's name indicates, the vessels employ the word Forest: Forest King, Forest Dream, Forest Pride, Forest Friend.

**S. S. Freeman & Company**—The Christian name Daisy is used, in one case alone, in the others as the Christian name of a person; examples: Daisy, Daisy Gadsby, Daisy Matthews.

**Furness, Withy & Co. (Prince Line)**—This system is simple, consistent and picturesque, consisting of the word "Prince" preceded by an adjective that usually denotes nationality: Algerian Prince, Manchurian Prince, Trojan Prince; also Lancastrian Prince; also Soldier Prince, Royal Prince, Black Prince.

Vessels of the Johnston Line, Furness, Withy & Company, end in "more", as Barrymore, Cedarmore, Pinemore. Names of vessels of the Manchester Liners, Ltd., employ "Manchester" followed by a noun, as Manchester Brigade, Manchester City; the Rio Cape Line, Ltd., uses "Glen" as the first syllable, examples being Glenaffric, Glendhu; the passenger liners of the Quebec Steamship Company have names of two or three words, the first of which is "Fort": Fort Hamilton, Fort St. George; names of the Empire Transport Company, Ltd., end in "Transport", as American Transport, British Transport; of the Houlder Line, Ltd., in "Grange", as Oaklands Grange, Thorpe Grange; of the Neptune Steam Navigation Company, Ltd., in "Range", as Alpine Range, Malvern Range; of the Norfolk & North American Steam Shipping Company, Ltd., in "Point" and "Miller", as Cornish Point, Northwestern Miller; of the British Empire Steam Navigation Company, Ltd., in "River", as Derwent River, Fraser River. The "esa" vessels, as Abadesa, Baronesa, of the Furness-Houlder Argentine Lines, Ltd., are refrigerator steamers, as are the "El" vessels (El Cordobes) of the British & Argentine Steam Navigation Company, Ltd. Vessels of the Gulf Line, Ltd., end in "O", usually in "No", as Ariano, Castellano. There are a few exceptions to these systems.

**W. R. Grace & Co.**—Spanish names of women saints: Santa Rita, Santa Inez, Santa Alicia; also Santa Cruz; two exceptions: Colusa, bark Belfast.

**James Griffiths & Sons**—The first syllable of the Griffiths name is the base of the company's system: Griffco, Griffson, Griffdu; but there is practically a second system: steamship Anyox, named for the site of the smelter of the Granby Consolidated Mining, Smelting & Power Co., and barges Granco and Granby No. 1, both named in compliment to the Granby company. There are exceptions to both: General Fairchild, Marmion and others.

**Harrison Direct Line (T. & J. Harrison)**—Names of vessels generally are derived from the arts and letters, learned professions, statecraft, military science, adventurous callings. Some examples will serve to make the system clear: Actor, Author, Musician; Architect, Specialist, Professor; Dictator, Diplomat, Senator; Centurion, Tactician, Warrior; Explorer, Gladiator, Matador. In spite of the wide range covered the Harrison is one of the more distinctive of all systems. There are such exceptions as Custodian and Patrician, which nevertheless are suggestive; and others as Ingoma and Intaba, which cannot be linked with the majority.

**Hind, Rolph & Co.**—No definite system is employed; Hawaiian names, however, are largely used: Hawaii, Honoipu, Lahaina, Makaweli, Puako. There are exceptions, such as Muriel, Conqueror, Robt. R. Hind and Wm. T. Lewis.

**Holland-America Line**—All freight steamship names end in "dijk," or, as the syllable usually is rendered in English, "dyk"; examples: Eemdijk, Moerdijk. Names of passenger steamships end in "dam"; examples: Leerdam, Noordam; and names of cities that end in the same syllable also are used: Rotterdam, Nieuw Amsterdam, Edam. "Dijk" and "dam" mean practically the same in Dutch, that is, a wall to protect the land against flood; and most of the Holland-America names have reference to rivers: Eemdijk, the dike of the Eem River. There are a few exceptions to both systems, such as Columbus.

**Inter-Island Steam Navigation Company**—Names of the vessels of this Honolulu company are generally Hawaiian, as Kilauea, Mauna Loa, Mauna Kea; there are two exceptions: Claudine, Helene.

**Isthmian Steamship Lines**—Vessels built at the Chickasaw plant of the United States Steel Corporation have the names of cities with City added: Ensley City, Mobile City, Montgomery City, Tuscaloosa City, Atlanta City, most of the names being selected from Southern United States. Vessels built at the Federal yard, Kearny, New Jersey, employ nouns preceded by the adjective Steel: Steelmaker, Steel Mariner, Steel Worker. As in the case of the Canadian Government Merchant Marine the nouns end in the letter "R", with the exception of two vessels, but this coindence is apparently accidental. There are exceptions to both systems, such as Bantu, Charlton Hall, San Francisco; also vessels purchased of the Robin Line Steamship Company: Robin Adair, Robin Goodfellow.

**Java-China-Japan Lijn (Java-Pacific Line)**—Most vessels of the company are named after rivers, islands and places in the Dutch East Indies. The conspicuous system employs the names of rivers: Tjisalak, Tjileboet, the syllable "Tji" meaning "river". Other vessels, such as Arakan and Gorontalo, are named after towns, and Saleier and Simaloer, etc., after islands.

**Lewers & Cooke**—Family names: Robert Lewers, Alice Cooke.

**Los Angeles Steamship Company**—The names of the company's two passenger vessels are sufficient explanation: Yale, Harvard.

**Luckenbach Steamship Company**—All vessels with the exception of the Pleiades bear names of members of the Luckenbach family: Katrina Luckenbach, Walter A. Luckenbach, Andrea F. Luckenbach.

**Matson Navigation Company**—Under the present system vessels are given names beginning with the letter "M", and in all cases except one, that of the Matsonia, the names are of Hawaiian origin: Manoa (a valley of Honolulu), Maui (one of the principal islands of the group), or are compounds of Hawaiian words: Manukai (bird of the sea) and Manulani (bird of heaven, or, more poetically, bird of paradise). The older steamships, Lurline and Wilhelmina, named after daughters of officials of the company, were built prior to adoption of this system; and there are other exceptions, as Enterprise, Annie Johnson, Hyades, which were bought by the company years ago.

**Mexican States Steamship Line**—As the company's name indicates, all vessels are named for states of Mexico: Chihuahua, Chiapas, Colima, Oaxaca, Sinaloa, Guerrero.

**Mitsui Bussan Kaisha** (Mitsui & Co.) and Ryoto Kisen Kaisha, a Mitsui subsidiary—most of the names of ocean-going vessels of this Japanese line end in "san": Fujisan Maru, Tenpaisan Maru, Atagosan Maru, and so on. This "san" is not the honorific that follows the name of an individual, however (the late premier was Hara-san); but is an entirely different word meaning mountain. Thus Fujisan, in the current speech of Japan, means Mt. Fuji, for the form Fuji-no-yama, corrupted into the Europeanized form of Fujiyama, is poetic and is practically never heard. There are several exceptions to this rule, most being small vessels.

**Nippon Yusen Kaisha**—The N. Y. K. has no general system of nomenclature, but most names are of geographical derivation, cities, mountains and rivers being favored. The passenger liners Fushimi Maru, Katori Maru, Kashima Maru and Suwa Maru are named after shrines in Japan. Some cargo-vessels do have distinctive systems; the well-known "T" class steamships are given the names of Japanese towns beginning with the letter "T", examples being Toyooka Maru, Tokiwa Maru and Toyama Maru; and vessels of the "D" class have names of ports beginning with that letter: Durban Maru, Dakar Maru and Delagoa Maru. A few other typical names follow: Bombay Maru, Kobe Maru, Malacca Maru, Lisbon Maru.

**Ocean Motorship Company**—Names are taken from the language of the Australian aborigines, the vessels having been built for the Commonwealth government, and designate places and peoples; examples: Boobyalla, Culburra.

**Oceanic Steamship Company**—All steamers have borne the names of counties of California: Mariposa, Alameda, Ventura, Sonoma, Sierra. Although all these names end in "A" the coincidence is accidental.

**Osaka Shosen Kaisha**—No system is used; nevertheless, geographical names are quite common and cover an unusual range. Some examples follow: mountains, Altai Maru, Himalaya Maru, Andes Maru; rivers, Indus Maru, Amur Maru, Amazon Maru; countries, Canada Maru, Siam Maru, Arabia Maru; continents, Africa Maru, America Maru; islands, Celebes Maru, Java Maru, Sumatra Maru; states or territories of the United States, Alabama Maru, Hawaii Maru, Arizona Maru; cities, Chicago Maru, Honolulu Maru, Nanking Maru.

**Pacific Mail Steamship Company**—No system is employed. Prior to the sale of the old fleet names of countries or provinces of Asia were largely used: Manchuria, Mongolia, Korea, Siberia, Persia, China; exception: Nile. In still earlier years such names as City of Tokio, City of Peking, were favorites. The three passenger vessels purchased in Holland during the war bear the names assigned by the Dutch owners, who intended to employ them in the South American trade; Venezuela, Colombia, Ecuador. Four freight vessels purchased of the Shipping Board are of the Point class: Point Adams, Point Lobos.

**Pacific Steamship Company** (the Admiral Line)—The company's own name indicates its preferred system: Admiral Dewey, Admiral Evans, Admiral Schley. There are exceptions such as Queen, President, Senator.

**Royal Mail Steam Packet Company**—From 1839 until comparatively recently, the R. M. S. P. named its vessels for rivers. Within the last ten years vessels have been classed under the initial letters of their names: the "A" steamships, such as Andes and Almanzora, are high-class passenger liners plying between South America and England; the "O" vessels, as Orbita, Orduna, run between New York and Europe; the "D" steamers, as Darro and Demerara, are intermediate passenger vessels of the South America service; ships of the "N" class, for example, Nagara, Navasota and Nebraska, are refrigerator craft and usually run between the United Kingdom-Continent and the River Plate; "E" class vessels, such as Ebro and Essequibo, are engaged in the New York-South America trade; "S" vessels are all freight steamships employed in various routes, and the "C" class, Chaleur and Chignecto, run between Halifax and the West Indies. There are also older vessels of the fleet built prior to the adoption of this system.

**The San Francisco & Portland Steamship Company**—The company's vessels have been given names of local significance: Beaver after Oregon, the Beaver State; Bear after California, the Bear State; Rose City after Portland.

**Societe Generale de Transports Maritimes a Vapeur**—The most distinctive system employs names of mountains: Mont Cenis, Mont Pelvoux; names of countries, provinces, islands also are used: Espagne, Formosa, Flandre; there are exceptions to both rules.

**Standard Oil Company of California**—The only system used today is to name vessels after officials and officers of the company; examples: K. R. Kingsbury, R. J. Hanna, S. C. T. Dodd, Charlie Watson. Older vessels, such as Atlas and Richmond, are exceptions.

**Toyo Kisen Kaisha**—This line's system, one of the more interesting of all, bears a superficial resemblance to those of the Cunard and White Star, in that it employs a distinctive ending of two letters. In the case of the White Star this ending is "ic", in that of the Cunard "ia" and in that of the Toyo Kisen Kaisha it is "yo"; but whereas the Cunard and White Star systems are quite apparent, that of the T. K. K. is obscured by the inevitable "Maru." The resemblance is, as was stated, merely superficial, for the T. K. K. "yo" is in itself a word and not merely an ending. The meaning of "yo" in Japanese is "ocean"; and the names of T. K. K. vessels are compounds, the first word in some cases a noun and in others an adjective. To illustrate: Tenyo Maru, heaven-ocean; Shinyo Maru, spring-ocean; Choyo Maru, morning-ocean; but Taiyo Maru, great ocean; Anyo, tranquil; Seiyo, calm; Rakuyo, pleasant; Ginyo, silver; Bokuyo, coal-black; Reiyo, admirable; Hayo, eddying; Meiyo, bright; Koyo, fragrant, ocean. The older vessels of the T. K. K. fleet, such as Nippon Maru, did not follow this system; and three former Pacific Mail vessels, Korea, Siberia and Persia, retain their old names with the addition of Maru.

**Union Oil Company of California**—Vessels are named after oil fields of California: Montebello, Fullerton, Whittier, Coalinga.

**Union Steamship Company of British Columbia**—Steamers of this line bear Indian names beginning with "C", usually names of old Indian settlements or lakes and streams in the province of British Columbia: Cowichan (a lake), Chilco (a river), Chilliwack and Coquitlam (villages). Venture is an exception.

**Union Steamship Company of New Zealand**—For many years the Union company named its vessels after lakes and waterways of New Zealand, as Wanaka and Wakatipu, lakes of the South Island. These and other names, such as Moana and Maori, were of Maori origin. Suitable names of lakes and waterways having been practically exhausted, the company chose names fitting the trades in which vessels were engaged; thus the Tahiti is employed in the Tahiti service, and the Niagara, of the Canadian-Australasian Steamship Line, has many passengers who either have just visited the falls or are on their way thither.

**United States Army**—All major and inter-island transports have been named for distinguished generals deceased, some examples being Meade, Sherman, Sheridan, Grant; but the group of vessels acquired from the United States Shipping Board in 1919, which are known as Hog Island transports, were given the names of battle-fields in France (Cantigny, Argonne), the Tours, named after the headquarters of the American Expeditionary Forces, being the only exception. Some of the ocean-going craft and freight and passenger vessels of 120-foot length and more have been named for distinguished generals deceased, these names usually being selected from the list of former quartermaster generals.

Mine planters are named for deceased generals of the Coast Artillery Corps, or such other officers of that service as the chief of coast artillery may designate.

Power freight and passenger harbor boats more than 100 feet in length, including ferry boats, are usually named for deceased colonels or lieutenant colonels, although there are two ferry boats named for generals, namely, Otis and Hancock, being used in New York harbor.

Quartermaster harbor boats less than 100 feet in length and junior mine planters, also non-ocean-going tugs, are usually named for deceased majors, although a few of these vessels have occasionally had the names of officers of higher rank assigned.

Launches assigned to commanding officers and other similar speed launches have been named for deceased captains.

The smallest type of launches are named for first and second lieutenants of the army, deceased.

In addition to the above, there are a number of types of boats that carry a similar initial for all vessels in the same class. These boats are known as "L", "Q", "V" (vidette launches) and "M" (motor mine yawls), and in addition to their initials carry their proper numerals in the order in which the boats were completed. Thus there are "M" boats running to numerals as high as 295, while the "L" boats run to 58.

**United States Bureau of Lighthouses**—Tenders of the Lighthouse Service are given botanical names derived from the flora of the districts in which they are to be assigned; example: Kukui, built for Hawaiian service. Lightships are given the name of the locality to be marked and also bear serial numbers.

**United States Coast and Geodetic Survey**—New vessels are given names that indicate the nature of their employment—that is, surveying and more particularly hydrographic surveying: Surveyor, Hydrographer, Pathfinder, Fathomer, Explorer, Research. The names of some vessels received from other branches of the government do not follow this plan.

**United States Coast Guard**—For several years cruising vessels of the Coast Guard (formerly Revenue Cutter Service) have been given names of Indian origin, usually of Indian tribes; examples: Apache, Haida, Modoc, Shawnee, Mojave. The Tampa, a new vessel, was named directly after a cutter that was torpedoed and sunk with all hands in the war, although this name itself is of Indian origin. Five Eagle boats taken over from the Navy have been named after commissioned officers of the Coast Guard killed during the war. Inshore patrol vessels, which are principally former submarine-chasers, have been named after warrant officers and enlisted men killed during the war. Harbor cutters have Indian names, although there are some exceptions. Small harbor launches have such names as Scout, Search, Sentinel. The old cutter Bear bore that name before being acquired by the Coast Guard.

**United States Navy**—Battleships and armored cruisers are named for states of the Union; cruisers for cities. (The six battle-cruisers, if completed, would have borne names of famous vessels of the old navy.) Destroyers are named after distinguished naval officers; submarines bear letters and numbers only, although some of the older classes had names of marine animals: Sturgeon, Nautilus, Walrus; colliers are being given names from Greek mythology: Jupiter, Orion, Cyclops; oil-carriers, Indian names of rivers of oil-producing districts; repair-ships are named for distinguished engineers; and all ships the naming of which is not provided for by law are named according to their distinctive purposes. Monitors once were named for states, but no longer.

**United States Shipping Board Emergency Fleet Corporation**—Inasmuch as the Shipping Board fleet is the greatest in the world, its naming systems require a more detailed explanation than do any others. The following is an outline of the principal plans used:

During various periods of ship construction for the United States Shipping Board Emergency Fleet Corporation, well-defined systems of naming vessels to designate class, type or place of construction were in vogue, but in the earlier war-time period the paramount aim was increased production through the stimulation of enthusiasm and patriotism to meet the need of "ships and more ships." As a means to this end, Mrs. Woodrow Wilson was asked to name all vessels contracted for by the corporation.

It was decided by Mrs. Wilson that Indian names of places and geographic sections of the United States would be most appropriate for naming vessels of our new merchant marine. Several hundred vessels of all types, both wood and steel, were named in accordance with this system; examples: Agawam, Biloxi, Coyote, Kanebec, Wampum.

In order to increase the interest in the shipyards for facilitating production, a special concession was granted whereby a vessel in each yard was to be named after the place where the shipyard was located. A few vessels were named on this account: Newburgh, Moss Point, Beaumont.

The first definite system put into effect to distinguish type, class and place of construction was the prefixing of the word "West" about March 1, 1918, to the names already assigned, or to be assigned, the 8800-ton steel cargo vessels constructing, or to be constructed, on the Pacific Coast; examples: West Aleta, West Mingo, West Cactus, West Nomentum. This plan was varied slightly by using the prefix "Western"; examples: Western King, Western Light, Western Queen"; but these were for the most part re-named requisitioned vessels.

At the same time that "West" came into use it was decided to add the word "Lake" as a prefix to the names already assigned, or to be assigned, to cargo steel vessels constructing, or to be constructed, on the Great Lakes; examples: Lake Erie, Lake Farrar, Lake Shawano, Lake Yahara, Lake Strabo.

On September 13, 1918, it was decided to prefix the word "Fort" to all Ferris type wood ships that had not been named. A few vessels were so named; examples: Fort Logan, Fort Scott.

When the Treasury Department started the Fourth Liberty Loan, it asked for the privilege of naming a certain number of vessels in honor of cities and towns that should attain a prescribed distinction in connection with the Liberty Loan campaign. When a community would double its quota or go over the top within a specified time, it was to be given the honor of naming one of our ships. Ten names were assigned to each of the twelve Federal Reserve Districts. The plan had the desired effect of stimulating the activities of the different communities, which were enthusiastic over the undertaking, and there was spirited rivalry among them for the distinction of gaining the right to name a vessel. After the armistice sixty-four additional communities that had won a second degree of distinction in the loan drives in the Federal Reserve districts carrying with it the right to name an army tank were given the privilege by the Emergency Fleet Corporation of naming one of the vessels instead; this privilege was exercised. Examples of Liberty Loan names assigned: City of Alameda, City of Dalhart, Brookline, Cecil County, Knoxville, and Houston.

The thirty steel cargo vessels constructed in Japan for the United States Shipping Board Emergency Fleet Corporation were assigned names beginning with Eastern; examples: Eastern Leader, Eastern Pilot, Eastern Admiral.

For the quick recognition of the 13,000-ton passenger vessels, they were assigned the nicknames of some twenty states; examples: Pine Tree State, Bay State, Hoosier State. There were three exceptions in the naming of the passenger vessels: Wenatchee, American Legion and Southern Cross.

Some of the last named steel tankers were given names closely allied with the oil industry; examples: Tulsagas, Lio (oil spelled backward).

**Williams Steamship Company**—Names of vessels are compounded from "Will," the first syllable of the name of the president of the company, George T. Williams, and from some game or sport: Willpolo, Willsolo, Willfaro, Willhilo (high-low).

**E. K. Wood Lumber Co.**—Names of prominent peaks of the Pacific Coast Range are used: Lassen, Shasta, Tamalpais. Other names, such as Sierra and Siskiyou, fall within the general plan, although they are more strictly speaking names of ranges and not of peaks.

# RATE-MAKING ORGANIZATIONS

## Shipping Board Conferences

THE following is a complete list of the United States Shipping Board conferences of the Pacific Coast. Only one conference, the U. S. S. B. Trans-Pacific Outward Conference, limits its membership to Shipping Board operators, but it works closely with the California Pacific Westbound Conference, of which non-board operators are members; all other Shipping Board organizations are composed of both Shipping Board and private operators. Names of conferences, dates of organization, memberships, trade routes controlled, non-members in the trades and offices are shown.

**Pacific Coast-Australasian Tariff Bureau.** Organized July 26, 1921, at San Francisco. Members: Canadian-Australasian Steamship Line, Vancouver; Canadian Government Merchant Marine, Vancouver; General Steamship Corporation, San Francisco and Puget Sound; Oceanic Steamship Company, San Francisco; Union Steamship Company of New Zealand, Ltd., San Francisco. Trade route controlled: Pacific Coast to New Zealand, Australia, and beyond. Non-members in the trade: Yamashita Kisen Kaisha (American-Australasian Line). Head office of bureau, San Francisco. Sub-committees, none. J. H. Todd, chairman and secretary.

**U. S. S. B. Trans-Pacific Outward Conference.** Organized July 15, 1920, at San Francisco. Members: Pacific Mail Steamship Company; Struthers & Barry, Inc.; Admiral Line; Matson Navigation Company. Trade route controlled: Pacific Coast to Japan, China, Philippines and beyond. Membership limited to U. S. S. B. operators only. J. H. Todd, chairman and secretary.

**Pacific Coast-West Coast South America Conference.** Organized September 2, 1920, at San Francisco. Members: General Steamship Corporation; W. R. Grace & Company. Trade route controlled: Pacific Coast to West Coast of South America; Central American ports not under control of the conference; West Coast of South America to U. S. Pacific Coast ports and British Columbia. Non-members in the trade: Johnson Line (spasmodic service); Toyo Kisen Kaisha; Latin American Line. J. H. Todd, chairman and secretary.

**Pacific Coast-North Atlantic Eastbound Conference.** Organized September 8, 1920, at San Francisco. Members: American-Hawaiian Steamship Company (United American Lines, managing agents); Atlantic-Gulf & Pacific Steamship Company; Luckenbach Steamship Company; Matson Navigation Company; North Atlantic & Western Steamship Company; Pacific-Caribbean & Gulf Line (Swayne & Hoyt); Pacific Mail Steamship Company; Williams Steamship Company. Trade route controlled: Pacific Coast loading ports, Vancouver-San Diego range, to Atlantic Coast discharging ports; Jacksonville-Portland, Maine, range. Non-members in the trade: Robert Dollar Steamship Company (one steamer); Isthmian Line (maintains conference rates); Congress Line (one steamer); Intercoastal Sea Carriers, Inc. (four steamers). Westbound rates controlled by North Atlantic-Pacific Coast Westbound Conference at New York; chairman, J. Sinclair (U. S. S. B.); secretary, E. E. Embree (U. S. S. B.). J. H. Todd, chairman and secretary.

**Pacific Coast-United States Gulf Eastbound Conference.** Organized August 12, 1921, at San Francisco. Members: Atlantic-Gulf & Pacific Steamship Company; Luckenbach Steamship Company; Pacific-Caribbean & Gulf Line (Swayne & Hoyt). Trade route controlled: Pacific Coast loading ports, Vancouver-San Diego range, to United States Gulf discharging ports, Galveston-Tampa range. Non-members in the trade: Isthmian Line (infrequent service; maintains conference rates). J. H. Todd, chairman and secretary.

**Pacific Coast-East Coast South America Conference.** Organized August 31, 1921, at San Francisco. Members: Pacific-Argentine-Brazil Line (Swayne & Hoyt). Trade route controlled: Pacific Coast to East Coast of South America. Non-members in the trade: None. This conference established by the Shipping Board as a working medium in the establishment of rates from the Pacific and Atlantic to East Coast-South America ports. J. H. Todd, chairman and secretary.

**U. S. Shipping Board Trans-Pacific Conference Homeward Committee.** Organized April 24, 1920, at Shanghai, China. Members: Admiral Line; Pacific Mail Steamship Company; Struthers & Barry, Inc.; Columbia-Pacific Shipping Company (North China Line). Membership confined to U. S. S. B. operators only. The general committee at Shanghai promulgates rates for North China ports and establishes rates suggested by the various sub-committees. No homeward rates can be established from any outport without the sanction of the general committee at Shanghai. **Shanghai general committee:** Chairman, George A. Heyburn, Admiral Line; secretary, V. H. Armstrong (unattached). **Kobe sub-committee** (has jurisdiction over Japan and Dairen rates): chairman, E. F. Townsend, Admiral Line; secretary, C. R. Sharp, Admiral Line. **Yokohama sub-committee** (under jurisdiction of Kobe): chairman, W. L. Johnstone, Pacific Mail Steamship Company. **Manila sub-committee** (has jurisdiction over Philippine Island rates): chairman, E. J. Brown, Pacific Mail Steamship Company. **Hongkong sub-committee:** chairman, J. Oram Sheppard, Pacific Mail Steamship Company; secretary, H. T. Krull, Admiral Line (has jurisdiction over South China and Saigon rates). **Singapore sub-committee:** chairman, J. E. Gardner, Jr., Pacific Mail Steamship Company; secretary, T. B. Wilson, Admiral Line.

**Pacific Coast-Cuban Eastbound Conference**—Organized November 15, 1921, at San Francisco. Members: Pacific Mail Steamship Company, Luckenbach Steamship Company, Pacific-Caribbean-Gulf Line (Swayne & Hoyt), Osaka Shosen Kaisha (pending approval of Osaka head office). The Robert Dollar Company works with the conference but is not formally a member. Trade route controlled: Pacific Coast to Cuban ports either direct or by transshipment at United States Gulf ports. Non-members in the trade: None (status of the Robert Dollar Company and O. S. K. explained above). J. H. Todd, chairman and secretary.

## California Pacific Westbound

During 1921 the Pacific Westbound Conference, which has succeeded the Pacific Coast Oriental Tariff Bureau, had a stormy time and finally broke into two well-defined groups, those of California and Puget Sound, with a third group of Columbia River operators splitting off later. In order that the present Pacific rate situation may be understood a brief history of last year's trouble follows:

During January, 1921, the Java-Pacific Line, under the agency of J. D. Spreckels & Brothers Company, withdrew from the conference for various reasons. It remained out of the conference until the last week in February, when a general conference was held in San Francisco of all of the lines. At this time a general reduction in all rates, both local and overland, was made and the conference continued to function as in the past with the Pacific Mail, the T. K. K., the China Mail, Struthers & Dixon, the Java-Pacific, the Columbia-Pacific, the Admiral Line, Blue Funnel, Mitsui, the O. S. K., the N. Y. K., and the Canadian Pacific, as active members, and Robert Dollar and the Canadian Government Merchant Marine protecting conference rates.

During April the China Mail Steamship Company withdrew from the conference, contending that it did not offer service to its membership. No action was taken to induce the China Mail to return.

During May the Java-Pacific Line again withdrew, and as the China Mail was already out, the other members of the San Francisco agency considered that the conference would not be effective with these two lines remaining out and decided to disband the organization. This became effective May 5. This condition obtained until the latter part of May, when a delegation representing the direct service lines operating out of New York visited the Pacific Coast and induced the lines operating out of San Francisco to reorganize. This was done with all the lines joining except the China Mail. This company agreed to protect conference rates. A general conference was then held in Seattle the first week in June and an effort was made to arrive at working arrangements with the lines operating out of Seattle and Vancouver. At this time the Columbia River lines organized a separate conference. Efforts to restore harmony were unsuccessful and it was agreed by the San Francisco conference and the Portland conference that they would continue as separate organizations. It was also agreed that the New York committee, which is composed of representatives of all of the lines engaged in trans-Pacific trade, should be continued. This organization was to have complete jurisdiction over overland rates subject to the recommendations of the principals who are members of the conference at Portland and San Francisco.

During August the conference at Seattle definitely disbanded but continued to maintain its representation in the New York committee. This condition continues to exist, although it is understood but not confirmed that there is an agreed working arrangement and a form of the conference at Seattle. The idea of a separate organization at San Francisco and Portland has proved satisfactory, for in the past Seattle held the majority of votes, and as any proposition submitted was subject to a two-thirds majority, it was often impossible for San Francisco lines to obtain the desired results.

George Powell of the Oregon-Pacific Company is the present secretary of the Columbia River Westbound Conference at Portland. W. D. Benson continues as agent of the New York Committee. The California Pacific Westbound, or the conference at San Francisco, is composed of Pacific Mail, Struthers & Barry, Java-Pacific, T. K. K., and Robert Dollar Company. The Columbia River Conference is composed of Columbia Pacific, T. K. K., and Admiral Line. M. J. Mayfield is the secretary.

# PACIFIC SHIPPING ASSOCIATIONS

THE past year has been a trying period for American shipowners and operators on the Pacific Coast, due not only to the slump in shipping, causing vessels to be withdrawn from active operation and to the decline in freight rates, but also to the marine strike on May 1, 1921, which temporarily tied up all shipping on the Pacific Coast, as well as at ports on the Atlantic and Gulf.

This readjustment period created many problems to be faced by Pacific Coast shipowners and operators as well as by all other lines of industry, affecting one and all alike. It was therefore within the province of the Pacific American Steamship Association and the Shipowners' Association of the Pacific Coast to bring about united action of their members and the benefits resultant therefrom have proved the wisdom of these organizations, representing collectively their members in the solution of such matters, in place of each individual being confronted with his own solution. The success attained in the outcome is due to the efforts of the associations and their committees, which devoted time and energy to carrying out the policies adopted by the associations.

### Fifteen Per Cent Reduction

The marine strike was the result of the owners and operators offering an adjustment of wages aboard ship from a war-time to a peace basis, with the elimination of overtime and adjustment of working rules, which was forced through the American merchant marine being handicapped as against foreign competitors with lower operation costs and by decreased revenue due to reduced freight rates. The marine unions refused to accept any reductions in wages from the war-time basis, and would not recede from their stand that no reduction would be considered, and all conferences between the union officials and the shipowners and operators to effect an adjustment were discontinued on May 1, on which date a reduction of 15 per cent in wages was made effective. The marine strike was declared on this date and resulted in the tying up of many steamers for some weeks. It was then decided by shipowners and operators to adopt the open shop or American plan, under which the ship's personnel would be given employment as individuals, and no discrimination made because of any affiliations the men might have. After a bitter struggle the marine unions admitted defeat and called the strike off, but the open shop aboard ship had become established, and still continues. A great improvement in personnel, discipline and sea-going upkeep has become evident.

### Employment Bureau Opened

In order to assure the men accepting employment a fair chance to secure employment, an employment bureau was established on September 1, 1921, by the Pacific American Steamship Association and the Shipowners' Association of the Pacific Coast, where private owners and operators could apply and secure men needed for their vessels, without having to secure them through union headquarters as formerly. This employment bureau has been a success, both for the men seeking employment and the shipowners and operators, and the continued good results have proved its need for bringing the marine workers and employers into closer touch, without interference of the unions.

The following circular of the Pacific American Steamship Association and the Shipowners' Association of the Pacific Coast, issued September 1, explains the recruiting plan, which is regarded as one of the important results of the strike:

As you are aware, the steamship associations of the Atlantic, Gulf and Pacific coasts adopted the open shop, or American, plan in employing ship's personnel, effective as of May 1, 1921. This plan has been established after considerable difficulty on the part of American shipowners and operators and has proved more satisfactory than the method in effect prior to that date, and in order to assure its continuance the Pacific American Steamship Association and the Shipowners' Association of the Pacific Coast have opened marine employment bureaus in San Francisco and San Pedro and will include other ports as soon as possible.

Inasmuch as the control of the employment feature has been the great lever that has enabled the representatives of the trade unions to cause difficulties between the men and the employers, it has been considered wise on the Pacific Coast to take the control of the employment of the men out of the hands of labor leaders, and to this end the Pacific American Steamship Association and the Shipowners' Association of the Pacific Coast have consolidated their energies to control the employment of the ship's personnel of their members. The fundamental rule of this marine service will be a square deal for the employe and for the employer, and the scope of operations will be in the nature of a clearing house for all marine labor disputes. In these bureaus, men will be welcome to present any claims for overtime, unfair or unjust treatment aboard ship or on shore, and such reports will be considered by a labor committee, composed of members of the two associations acting jointly, who will consider these complaints to determine the justice and, when warranted, take the matter up with the individual owner for adjudication of such reported grievances. By these means we shall cause marine employes to realize that shipowners and operators will give more prompt, adequate and fair consideration to any claims justly made than could delegates of any unions, and this without cost to the men.

### How Plan Works

Since these bureaus have been established, about 1600 men of all grades have been assigned to vessels for sea service, and about 6000 men of all grades have been registered in the employment offices. The modus operandi in effect for the employment of marine labor is: The marine workers are required to register at the marine employment bureaus and receive numbered registration cards. The men assemble daily at the various employment offices and as requisitions are received for employment, are selected by number, the one with the lowest number receiving the appointment for the designated position. After men have been assigned and are discharged or quit such employment, they must again register and go to the bottom of the list.

This registration system, particularly in its application to positions aboard ship, causes men to be more careful in the discharge of their duties because they know when they are discharged or quit their positions they must be re-registered and await their turn for employment.

When men are assigned aboard ship they are given employment cards certifying their employment, and it is proposed to give them continuous service books which will show the records of the men continuously. These are to be delivered to the captain of the vessel and on the reverse side there is an efficiency rating space to be filled out by the master and returned to the employment office at the termination of employes' service. This efficiency rating enables the employment office to determine the character, sobriety, loyalty and efficiency of the employes and is the basis for their future employment.

### Fitness of Officers Checked

The licensed officers are required to make application for positions on blanks furnished, which give the full history of their previous employment. These enable the employment bureau to check up all registered marine employes and determine their fitness for assignment to vessels, which will afford masters and chief engineers first-hand information concerning the character and reputation of all applicants before being hired aboard ship.

We cordially invite all non-members of the steamship association to secure men needed aboard ship from these employment bureaus. A nominal charge has been arranged for non-members to cover actual expense in connection with furnishing men of one dollar per man for unlicensed men, two dollars per man for licensed officers.

# Personnel of Associations

### PACIFIC AMERICAN STEAMSHIP ASSOCIATION, OFFICIALS AND COMMITTEES:

**Officers:** Robert Dollar, president; A. F. Haines, first vice-president; Daulton Mann, second vice-president; J. P. Williams, secretary-treasurer.

**Board of Directors:** Robert Dollar, A. F. Haines, Daulton Mann, Captain C. W. Saunders, J. C. Rohlfs, H. R. Struthers, J. E. Cushing.

**Executive Committee:** J. E. Cushing, chairman; F. M. Barry, Daulton Mann, Captain C. W. Saunders, Drew Chidester, A. F. Haines.

**Committee on Legislation and Policy:** Robert Dollar, chairman; H. R. Struthers, vice-chairman; J. C. Rohlfs, Captain C. W. Saunders, A. F. Haines, A. P. Hammond.

**Labor Committee:** Captain C. W. Saunders, chairman; Daulton Mann, F. M. Barry, J. E. Cushing, J. C. Rohlfs, H. S. Eaton.

**Employment Service Committee:** Captain C. W. Saunders, chairman; Thomas James, J. C. Rohlfs.

**Membership Committee:** F. M. Barry, chairman; Drew Chidester, J. P. Williams.

### PACIFIC AMERICAN STEAMSHIP ASSOCIATION, MEMBERS AND THEIR REPRESENTATIVES:

The Admiral Line, A. F. Haines, Seattle; H. S. Eaton, San Francisco.

Alaska Steamship Company, E. T. Stannard, Seattle.

Associated Oil Company, George D. Zeh, San Francisco.

Columbia-Pacific Shipping Company, K. D. Dawson, Portland; A. B. Cahill, San Francisco.

The Robert Dollar Company, Robert Dollar, San Francisco; A. A. Moran, San Francisco.

E. C. Evans & Sons, E. C. Evans, Jr., San Francisco; Harry Evans, San Francisco.

General Petroleum Corporation, William Walker, Los Angeles; C. R. Stevens, San Francisco.

General Steamship Corporation, Drew Chidester, San Francisco.

W. R. Grace & Company, F. L. Doelker, San Francisco.

Luckenbach Steamship Company, Inc., San Francisco.

Matson Navigation Company, Captain C. W. Saunders, San Francisco; J. B. Banning, Jr., Los Angeles.

McCormick & McPherson, E. L. McCormick, San Francisco; W. S. McPherson, Los Angeles.

Oceanic Steamship Company, F. S. Samuels, San Francisco; J. G. Stubbs, San Francisco.

Pacific Mail Steamship Company, Daulton Mann, San Francisco; H. E. A. Railton, San Francisco.

Standard Oil Company, J. C. Rohlfs, San Francisco; C. H. Robertson, San Francisco.

Struthers & Barry, Inc., H. R. Struthers, San Francisco; F. M. Barry, San Francisco.

Sudden & Christenson, A. B. Cahill, San Francisco; C. H. Chandler, New York.

Swayne & Hoyt, Inc., C. E. Brown, San Francisco; Lloyd Swayne, San Francisco.

Thorndyke-Trenholme Company, Inc., George F. Thorndyke, Seattle; J. C. Ogden, San Francisco.

Union Oil Company, Max Dyer, Los Angeles; T. A. Hays, San Francisco.

Williams, Dimond & Company, J. E. Cushing, San Francisco.

### SHIPOWNERS' ASSOCIATION OF THE PACIFIC COAST, OFFICIALS AND COMMITTEES:

**Officers:** president, S. M. Hauptman; vice-president, R. W. Myers; secretary-treasurer, W. F. Sullivan.

**Directors:** S. M. Hauptman, R. W. Myers, James Tyson, L. C. Hammond, U. G. Richards, W. R. Chamberlin, John L. Reed, F. J. O'Connor, J. Fred Barg.

**Finance Committee:** J. Fred Barg, James Tyson, R. W. Myers.

**Membership Committee:** W. R. Chamberlin, U. G. Richards, John L. Reed.

**Arbitration Committee:** L. C. Hammond, F. J. O'Connor, W. R. Chamberlin.

**Grievance Committee:** James Tyson, L. C. Hammond, R. W. Myers.

**Harbor and Shipping Committee:** U. G. Richards, John L. Reed, F. J. O'Connor.

**Employment offices** are maintained as follows: 84 Embarcadero, San Francisco; First and Front streets, San Pedro.

Members of the association operate and have entered in the association 162 steam, motor and sail vessels.

Members and vessels operated: Albion Lumber Company, Hobart building, San Francisco, 1. Atlas Steamship Company, 332 Pine street, San Francisco, 2. J. H. Baxter & Company, American National Bank building, San Francisco, 2. George S. Beadle, Inc., 112 Market street, San Francisco, 1. Bowes & Andrews, 153 Steuart street, San Francisco, 2. Broughton & Wiggins Navigation Company, Yeon building, Portland, Oregon, 1. Buehner Lumber Company, North Bend, Oregon, 1. C. & O. Lumber Company, 2 Pine street, San Francisco, 2. Caspar Lumber Company, Hobart building, San Francisco, 1. W. R. Chamberlin & Company, Balfour building, San Francisco, 3. Coast Shipping Company, 24 California street, San Francisco, 1. Daisy Freeman & Owners, care Parr-McCormick Steamship Line, Fife building, San Francisco, 1. J. E. Davenport, Balfour building, San Francisco, 1. J. O. Davenport & Company, Balfour building, San Francisco, 1. E. J. Dodge Company, 16 California street, San Francisco, 1. Robert Dollar Company, Robert Dollar building, San Francisco, 3. Donovan Lumber Company, Aberdeen, Washington, 2. Eschen & Minor Company, 24 California street, San Francisco, 2. S. S. Freeman & Company, Fife building, San Francisco, 5. Hammond Lumber Company, 260 California street, San Francisco, 4. J. R. Hanify Company, 24 Market street, San Francisco, 4. D. J. Hanlon, 112 Market street, San Francisco, 2. Hart-Wood Lumber Company, Fife building, San Francisco, 6. Charles H. Higgins, Hansford building, San Francisco, 3. Hobbs-Wall & Company, Fife building, San Francisco, 2. E. T. Kruse, 24 California street, San Francisco, 2. Lewers & Cooke, Ltd., Honolulu, T. H., 2. Loop Lumber Company, Central Basin, San Francisco, 2. Fred Linderman, 110 Market street, San Francisco, 3. Little River Steamship Company, 112 Market street, San Francisco, 1. Andrew F. Mahony, Fife building, San Francisco, 7. C. R. McCormick & Company, Fife building, San Francisco, 6. Monticello Steamship Company, Vallejo, California, 4. Moore Mill & Lumber Company, 68 Post street, San Francisco, 2. National Steamship Company, Crocker building, San Francisco, 5. Charles Nelson Company, 230 California street, San Francisco, 17. Ocean Motorship Company, 310 California street, San Francisco, 7. Oliver J. Olson, Fife building, San Francisco, 2. Pacific Freighters Company, 310 California street, San Francisco, 4. Pope & Talbot, foot Third street, San Francisco, 1. Port Blakeley Mill Company, Balfour building, San Francisco, 1. The Richardson Company, 320 Market street, San Francisco, 1. Redwood Steamship Company, Monadnock building, San Francisco, 1. W. S. Scammell & Company, Fife building, San Francisco, 4. Seaborn Sailers, 2504 L. C. Smith building, Seattle, Washington, 5. C. Henry Smith, 311 California street, San Francisco, 1. Sudden & Christenson, 110 Market street, San Francisco, 10. Swayne & Hoyt, Inc., 430 Sansome street, San Francisco, 1. A. F. Thane & Company, Robert Dollar building, San Francisco, 2. The White Flyer Line, 110 Market street, San Francisco, 1. Wilson Brothers & Company, 110 Market street, San Francisco, 3. E. K. Wood Lumber Company, Fife building, San Francisco, 11.

### NORTHWEST STEAMSHIP MANAGERS' ASSOCIATION, SEATTLE, OFFICIALS AND COMMITTEES:

**Officials:** President, W. C. Dawson; secretary-treasurer, R. E. Borchgrevink.

**Executive Committee** (only standing committee): W. C. Dawson, H. C. Cantelow, G. R. Walker, A. Kinney, R. E. Borchgrevink.

**Members and their Representatives:** Pacific Steamship Company, Thorndyke-Trenholme Company, Inc., A. M. Gillespie, Inc., Frank Waterhouse & Company, Alexander & Baldwin, Inc., General Steamship Corporation, W. C. Dawson & Company, W. R. Grace & Company.

# THE WANDERING MINSTREL:

## An Unexpected Sequel

### FOREWORD, BY ANDREW FARRELL

In the November, 1920, issue of Pacific Marine Review I narrated, as one installment of a series of articles on wrecks in Hawaiian and adjacent waters, the story of the loss of the sailing vessels General Seigel and Wandering Minstrel on Midway Island thirty years ago and the subsequent sufferings and adventures of their crews. Especially did I dwell on the enforced stay of the Wandering Minstrel's crew on the desert atoll for fourteen months, and I attributed the length of the exile, and the subsequent deaths of several persons, to the failure of the first mate, Cameron, to report the loss of the vessel and the predicament of his shipmates after his arrival with two companions at the Marshall Islands. My authorities were old newspaper articles and a book by Captain F. D. Walker, master of the Wandering Minstrel, published in Honolulu several years ago. Aside from various inevitable discrepancies of detail, my account was that which had passed current in Honolulu for more than thirty years and which, so far as I could ascertain, had never been questioned. It is true that no version by Cameron existed, but he appeared to have vanished completely, and I assumed that he was dead and his story, whatever it might be, dead with him.

#### CAMERON STILL ALIVE

It was with considerable surprise, therefore, that I heard from Charles H. Sooy of San Francisco that Cameron of the Wandering Minstrel still lived in the person of Captain John Cameron, Standard Oil Company, 49 Harima-machi, Kobe, Japan. He had read my story of the Wandering Minstrel's loss and his own voyage to the Marshalls; he deeply resented what I had said of him, and with a view to making public his side of the affair, forwarded by Mr. Sooy a manuscript that he desired to have published.

After perusing Captain Cameron's statement I cannot find it in my heart to regret greatly any unwitting misrepresentation of which I have been guilty, for the result is to bring to light a hitherto unknown narrative, which represents a most valuable addition to the history of the General Seigel-Wandering Minstrel affair and also, I am sure, to the literature of the sea. There are few stories of adventure on the face of the ocean that can vie with that of these two vessels, and I, for one, am sufficiently depraved to rejoice that even what Captain Cameron regarded as gross injustice has caused him to make this belated contribution. He wields, as the reader shall see for himself, a doughty pen.

#### STORY RINGS TRUE

So far as I myself am concerned, I am quite ready to admit that justice has been done; to me (although I do not wish to anticipate the reader's own judgment) Captain Cameron's story rings true. But I submit that his own failure to tell his tale has forced anyone who delved into these old wrecks to believe what had passed without contradiction for thirty years; it is possible, however, that he did not know everything of which he had been accused.

Before Captain Cameron's story can be grasped readily, it is necessary that my former article be recapitulated briefly, inasmuch as the captain has written in direct rebuttal.

#### TWO VESSELS LOST ON REEFS

The schooner General Seigel, then on a sharking expedition, arrived at Midway Island from Honolulu and French Frigate Shoals late in 1886. A winter gale cast her ashore. Her crew of eight men, unhurt in the storm, was reduced to seven when one man essayed to fish with dynamite. Two others disappeared, and their companion, First Mate Jorgensen, or (as Captain Cameron spells his name) Jorgansen, told such an outlandish tale to account for their deaths that his four remaining comrades marooned him on Midway and sailed for the Marshalls, arriving after a voyage the success of which was almost miraculous.

On Midway Jorgensen remained until the Wandering Minstrel, out of Hongkong via Honolulu and French Frigate Shoals on a sharking expedition, arrived early in 1888. The newcomer ended as did the General Seigel, that is to say, on a patch of coral. Things went from bad to worse (on this score Captains Walker and Cameron agree perfectly), with the upshot that Cameron and Jorgensen and a Chinese boy sailed away to the Marshalls, leaving their shipmates on Midway. The castaways were rescued by the schooner Norma in April, 1889, after several had died.

Captain Cameron's account has been subjected to some editorial revision for the sake of greater clearness and smoothness, but the changes are relatively unimportant, except that several strictures on Captain Walker have been deleted. After thirty years Captain Cameron's hate burns hot, as is natural in a man who regards himself as grievously wronged by his old skipper; Captain Cameron certainly is entitled to a full hearing, but some of his statements concerning Captain Walker are not germane and others would have been deleted by Captain Cameron, I am sure, if he had given himself an opportunity to cool down.

Here and there throughout his narrative I have taken the liberty of inserting notes dealing with some particular points raised

# First Mate Cameron's Story of the Wreck, His Sojourn on Midway and His Voyage to the Marshalls

### By CAPTAIN JOHN CAMERON

THE Wandering Minstrel was a hoodoo vessel for me right enough, as I landed on Midway with only the clothes I had on. Captain Walker may have purchased the vessel, but she was owned by a syndicate in Hongkong, a man by the name of Humphrey, a chemist, being the biggest shareholder. I saw the prospectus drawn up by Captain Walker, who surely did throw dust in the eyes of the shareholders. From reports I heard there was some difficulty in leaving Hongkong on account of debts contracted by the captain, which were probably paid September 13, 1887. These reports I heard from Mr. Tomlinson, who was second officer.

The vessel put into Honolulu because of friction between Captain Walker and his officers. A naval court of inquiry was held and all the officers were paid off. I was requested by Major Wodehouse, the British commissioner, to join as chief officer. Thinking the matter over I consulted an old friend, Captain Ben Whitney, who advised me to accept it, remarking that I was still a young man and it would be an opportunity to know what prospects were in shark-fishing. Taking my friend's advice I joined the vessel December 8, 1887. My salary was arranged by the British consul, Mr. T. R. Walker.

#### Some Delightful Cutthroats

On going on board the vessel, which was anchored outside, I found that the crew refused to work. What a mixed crew they were, the rakings and scrapings of several nationalities, Filipinos predominating, niggers, Malays, Chinese, natives of Mozambique—a delightful lot of cutthroats! Three days after I joined, a letter from the British consulate requested my presence. When I entered the consulate, both the commissioner and the consul were there. A letter from the crew was read to me, in which they complained of insufficiency of food, a leaky forecastle, a sprung foremast-head and excessive drinking by the captain. The commissioner and consul asked me for my opinion of the crew's complaints, and I answered as follows: The food they received was quite sufficient and good; the leaks in the forecastle could be repaired by the carpenter; the masthead was in good condition, or the vessel would not have weathered the gales encountered since leaving Hongkong as reported in the logbook. As for the captain's drinking, I saw him have a glass or two of beer occasionally; the commissioner remarked that there was no harm in a man taking a drink or two of beer. I was then asked what should be done, as the crew refused to work. My reply was that the question should be referred to the captain of the British war-vessel Conquest, then in port.

"That is a good idea," the commissioner remarked. "Will you take a letter from me to Captain Oxley?"

I went on board the Conquest, but the captain was on shore. I went on board again the next forenoon and was received by Captain Oxley, who handed me a letter for Captain Walker. I thanked him and took the letter to Captain Walker.

### Advice of a Naval Officer

Captain Oxley advised Captain Walker to apply to the civil authorities first; if they did not act in the matter, Captain Oxley himself would act immediately. I was requested by Captain Walker to go ashore and take the question up with the civil authorities. On asking the captain why he himself did not go, he replied: "I have had enough of the damned shore," referring, no doubt, to the heckling that he received at the naval court of inquiry. Evidently that is what he did refer to, for Major Wodehouse informed me that were it not for his wife and three boys, Captain Walker would be discharged. I was also instructed by Major Wodehouse to report to the British authorities about anything occurring on board after leaving Honolulu and until arriving in Hongkong. The agreement was that I should stay by the vessel until arrival at destination, and, should we put into any other port, to report to the British authorities there, or to anyone in authority, of the vessels's sailings and happenings on board.

After I had interviewed the police officials, a squad of police was sent on board; the crew were lined up on deck, and, on refusing to turn to, were handcuffed. The two dangerous characters were taken in charge by the police; the handcuffed crowd were housed in the forepeak and the companionway secured with scantlings spiked on to prevent them getting out. This state of things appeared to have no solution, so I forced the captain to make a start or else I would resign.

"What can we do?" he asked.

"Get under way," I replied.

"How can we?"

"Give me orders; I'll carry them out."

"All right, Mr. Cameron; get ready to sail."

### The Departure from Honolulu

Mustering the three boatswains, carpenter, donkeyman, cooks, stewards and the captain's three boys, I started to get up anchor. This I knew we could not accomplish, but I surmised that on hearing the windlass rattling the crew would wish to be liberated. Sure enough, they shouted through their prison bars that they wanted to get on deck. I sent to the captain for the handcuff keys and liberated six of the men, just enough to enable us to get away and not too many for me to handle if they proved intractable. The rest I intended to keep in irons until properly tamed, which a light diet would soon accomplish. We started under easy sail. Captain Walker begged me to release the men. I told him that I was handling them and would release them when time to do so.

We sighted French Frigate Shoals and I released the crew prisoners. Upon arriving we dropped anchor in about fifteen fathoms of water. On the next day we hunted for a better anchorage, but there is no safe berth there for a vessel like the Wandering Minstrel. Captain Walker cruised in the launch looking for sharks. Very few small sharks were seen, but the captain and his family had enjoyable picnics. For some days fine weather prevailed; then threatening weather set in and the vessel was placed in a precarious position. I suggested to Captain Walker that we should sail, as our situation was dangerous; but he coolly said that the crew had better get breakfast.

"Never mind breakfast, captain," I said; "they can have that afterward."

### In the Nick of Time

Even the crew were anxious and insisted that the captain should get the vessel under way. He gave a grumbling consent, so we got started, but none too soon, as the wind increased to a gale that would surely have wrecked the vessel had we delayed half-an-hour. Actions speak louder than words, and the captain's actions made me do some hard thinking. I frequently found the windlass riding pawls, which were secured on the deck, unshipped, the check pawls only preventing the windlass from revolving. When I accused one of the boatswains of neglect he told me that the captain unshipped the riding pawls; I took the captain to task about it and he said that the vessel rode out two typhoons in Hongkong without them. Anyway, he was the master. Should the vessel be wrecked, he said, he would build a schooner out of the wreck, as there was plenty of gear on board—blocks, ropes, canvas, etc.; and would sail to some part of South America, as he was acquainted in that part of the world. But for safety's sake I had the pawls set at night.

Well, to proceed with the vessel's movements: we made for Midway Island, sighting it and nearing it in the afternoon. While sailing along the beach looking for the passage we noticed a man waving at us. He was Adolph Jorgansen, marooned by his shipmates of the wrecked schooner General Seigel, owned by Mr. Frank Cooke, a member of one of the families of Castle & Cooke, Honolulu. Night coming on we hauled off-shore.

### Jorgansen No Murderer

After we had experienced nasty weather for three days we made for the passage. Heavy surf rolled through and on board. In the middle of the passage the captain gave orders to take in sail. This I refused to do, as we would lose control of the vessel and the consequences would prove disastrous. The captain realized the danger and approved of keeping sail on until we were through the channel. When we had anchored in Welles Harbor, in five fathoms of water, moored with both anchors, Captain Walker, his family and I went ashore, meeting Jorgansen on the beach. Jorgansen knew me, but I did not remember ever seeing him before. He may have been a murderer or he may not. My own belief is that he was not; he was only a simple, overgrown boy of Danish nationality, a good-natured, obliging and harmless individual. I have his report of what transpired between him and his shipmates on Midway. There was no madness about him. Captain Walker never attempted to shoot him; there was no reason for such a thing.

It was about time to get about the shark-fishing, and gear was landed for the purpose. After exploring the lagoon one day the skipper came on board excited, shouting to me that our fortunes were made.

"The lagoon is simply full of beche de mer."

### Two Kinds of Sea-Slugs

He brought on deck what he thought were beche de mer, but they were only sea-slugs of no value whatever.(1) I could not, however, convince him of his mistake. He ordered me to get net-rakes made to sweep up from the bottom these sea-slugs, which he thought were beche de mer. To try to convince him of his folly I requested him to allow me to search for what I knew to be genuine beche de mer. He gave me permission, and the boatswain and I scoured the lagoon. We found only six. Returning on board I showed him the genuine article and at last convinced him. He undertook an enterprise without any knowledge of it and was also a very poor sailor.

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(1) In the southern atolls, and I assume in Midway as well, the valuable beche de mer, which is sought for the Chinese market, is yellow. The black sea-slug is worthless.—A. F.

Considering our berth a very unsafe one, I surveyed a passage that was negotiable, leading into the lagoon between the islands, where the vessel could ride with safety in any weather, the deepest part being about fourteen fathoms. On my reporting this, Captain Walker decided to shift, so we made preparations to tow the vessel there with the steam launch. When we started we made good headway, the captain being on the forecastle-head and I in the steam launch piloting the way. Whether it was funk I don't know, but Captain Walker dropped anchor again, letting several fathoms of chain run out over and above what was necessary and giving us a foul anchor. Returning on board I spoke my mind pretty freely to the skipper about his actions.

### Windlass Is Smashed

To go back a little: the same game with the riding pawl was carried on by the skipper and resulted in rendering our windlass useless. According to the report of one of the boatswains, Captain Walker went forward after I turned in and unshipped the pawls. The boatswain called me when the smash came. I went forward and found the windlass smashed and the chains run out to the bitter ends. Here we were with a smashed windlass and no means of repairing it. Fortunately there were two coils of four-inch Manila rope on board, each of 400 fathoms, and three-fold and four-fold purchase blocks. With this gear I rigged a purchase from the waist chocks to heave in the chain and ride by.

The climax came when a storm of hurricane force from the northwest got up and heavy seas rolled through the passage into the harbor. A coral reef to leeward of us and heavy breakers bursting upon it looked anything but pleasant. I knew that unless a miracle happened the vessel was doomed. We had an anxious time of it. The skipper began to show the white feather. He consulted me as to what was best to do.

### "Let's Beach Her!"

"Well, captain," was my reply, "the vessel's stern is almost up to the wind due to the undertow from the reef. Slip the chains (we have a spare anchor) and run in closer, where it is smooth under the lee of the boulders. All we have to do is drop the lower topsails; the wind is on our quarter."

No, this he would not attempt.

"Well, skipper, let us run her plum ashore on the sand beach. She won't be hurt much and can be got off again."

This did not suit his book, either.

The weather was getting worse and we were in a desperate position and were certain that our anchors would not hold; one of them I knew, as I have said, to be foul. Captain Walker asked me again whether there was anything I would recommend and I stated that there was only one more thing that could be done; that was to cut away the masts. He could not think of attempting it, as he was afraid that some of the men might be killed. I replied that even that would not be as bad as the whole of us being lost and that there was a chance to save both the hull and ourselves if he did as I suggested. If he did not, then what happened might be disastrous to all.

### Driven on a Reef

On the night of February 2 I remained on deck the whole night. In the morning Captain Walker came on deck, but I was done with him. He took hold of the lead line to see whether the vessel dragged. She had dragged a little during the night. Several times he came and handled the lead line. I knew that the vessel was gradually sagging toward the reef. I ordered the cook to hurry with the men's breakfast and told the crew to make haste and swallow it, as it would be their last on board. The crew started packing their kits. About 8 a. m. I was having my last smoke on board and waiting to feel the first bump. The bump came. I did not move, but watched the skipper making his way toward me on the main deck.

"She's struck, Mr. Cameron! What are we going to do now?"

"What in hell do you think? Save lives, you blasted idiot!"

"Oh, how can we? A boat would not live in the surf that is running."

"It's the only chance," I replied.

"The weather might moderate before the vessel was broken up on the reef, so it might better to remain on board."

"You damned fool, get your wife and boys ready. Pack up useful articles only. I'm going to send them ashore at once."

He even hesitated about doing it.

"Go at once," I said.

After the boat was ready on the lee side I went to the cabin to hurry Mrs. Walker and the boys. On the steps as I went down I met the skipper.

"Mr. Cameron, my wife insists upon me going in the boat with her," said he.

"You can go to hell for all I care."

### Ashore Through the Surf

When I had got Mrs. Walker and the boys and their husband and father in the boat, the crew refused to go unless I went. Signifying my willingness I jumped into the boat, and singing out to let go I sprang back on the ladder. The boat was driven away by the sea and they had to make the attempt without me. My ruse I had planned with Jorgansen, to whom I gave charge of the boat.

The vessel was now pounding on the reef broadside on, the seas breaking over her and carrying as high as the topmasts. Our remaining boats were in the davits on the weather side, and to get them around to the leeward without smashing them was a difficult operation; after some strenuous work and hard driving of the crew, however, this was accomplished. The surf was still getting heavier and the wind was increasing and it was too risky to take anything in the boats. I felt sorry for the crew, as I had to refuse to allow them to take their effects, for it was a toss-up as to whether we could make the beach. We started off, leaving on board two pigs, which we thought might swin ashore, but they did not.

The crew were paralyzed with fright, so much that they could not handle the oars. I shouted to our second mate, Hanker, to take his oars in as I did, to prevent the boat from slewing broadside to the surf and capsizing. We ran before wind and surf to the sand beach. Before we beached I noticed that the captain's boat was lifted and tossed like an umbrella over the sand. Telling the crew to make a jump as soon as the boat struck, I headed for shore. We made a good landing, although the cook unfortunately was washed under the boat. He was got out more frightened than hurt.

### Wandering Minstrel Broken in Two

On the island was a small house of redwood, which had been built by some scientists who had gone to Midway some twenty-five years before to observe the transit of Venus. Here we were without provisions except for what I had put in the skipper's boat: some ham and bacon and one bag of biscuits. (The bag of biscuits, I learned afterward, was thrown out by Captain Walker to make room for something of less value.) Jorgansen gave up to the Walkers the room he occupied (there was only one), and he and I rigged up some shelter on one of the verandahs that encircled the house. Fortunately, on the score of food, Jorgansen had collected a store of gony eggs, each weighing nearly a pound.

In the evening I went to take a look at the vessel. Both fore and mainmasts were down; how long the mizzenmast stood I cannot say, as all that was left of the Wandering Minstrel next morning, consisting of the stern with the sail-lockers, which were just abaft the cabin, was washed ashore on the beach. In the lockers were some awnings. Everything else had been swept away to sea.

Next morning Walker came to tell me that the men refused to obey an order he had given them. He wished me to take them in hand.

"All right," I said. "You have firearms; give me one, and I'll liven them up and will shoot the first man who refuses to obey you—not to kill, but only to wing. You will have no trouble afterward."

This he would not agree to do, so I told him that he would have to paddle his own canoe if he would not give me the means of enforcing discipline.

### A Seaman Wields a Spear

A few days afterward, on returning from Brooks Island (so named after the discoverer, Captain Brooks of the bark Gambia) to Sand Island, on which we were living, I was met by Henry Walker, one of the captain's sons, who requested me to go to the house at once. I inquired why the call was so urgent. The boy told me that one of the men had driven a spear through his father's cheek. As Walker had made his own bed, I decided to let him lie in it and that I would not interfere. I told the boy to tell his father that it was too late now to control the crew; the opportunity had passed when he declined to let me have a weapon upon the men's refusal to obey his first order on the island.

We kept ourselves in fish with a net, some sixty fathoms long by ten feet deep, which I had had the crew make of the awnings by unraveling the cloths and knotting and skeining the threads. The wreck of the piano also came in handy, as we made hooks of the wires.

### They Build a Schooner

With this done we began to think of getting away from the island. Jorgansen thought that he could build a craft big enough to carry us, provided that I could get the men to work. They fell to willingly, and we knocked out together a craft of fourteen tons, the bottom being shaped like that of a sampan. Tools were made of the shark hooks. Wood we got from coal-lighters, left on the island, I believe, by vessels of the Pacific Mail, which ran between Australia and San Francisco, Midway being their coaling station.(2) We found lots of wreckage on the islands, also, masts, etc., and some very long redwood logs. We made sails of the awnings.

Our craft was launched successfully, but neither Jorgansen nor I intended to sail with silver-tongued Walker again. The skipper tried every inducement to get me to go with him, but there was nothing doing. He pestered me day after day; finally I consented on condition that he turn the schooner (such was her rig) over to me on arrival at the Marshall group. This, he said, he could not do, as it would rest with the underwriters. All bosh! To show what a brave man he was, he was afraid to start in the schooner unless I went. None of us had an opportunity to go in her, for a storm drove her ashore one night, and although we got her off all right, undamaged, she was driven on the beach a second time and left there to rot.

### Away to the Marshalls

Winter was now approaching, so Jorgansen, the Chinese boy and I fixed up one of the boats (not the best one; that was taken by the cook, Frank Lord, and five of the crew, who were never heard of again). On October 13, 1888, we sailed from Midway. Our navigating instruments were my broken sextant and a pocket compass, watch-size, which the skipper had given me. Thinking that we could find Ocean Island, where provisions were cached by the Hawaiian government, we took with us three live curlews, which we intended to loose, when we thought we were near the island, and so follow the direction they took. In this plan we did not succeed.

It was my intention to go to Honolulu, but as the winds were unfavorable and my two shipmates, Jorgansen and Moses, the Chinese boy, were seasick and I was getting badly used up, I kept before the wind for the Marshall group. Our provisions were smoked dried mullet and plenty of fresh water—nothing else. On the trip we caught two dolphins, a small turtle and a blue shark, the last of which I lassoed at night with the mainsheet. We made ourselves very sick by eating some of the shark. We felt as though we were poisoned and lay helpless, while the boat drifted about on her own hook. However, we recovered. During the trip we sighted no sail. In rough weather we hove to with our fish-net for a drag, the boat, twenty-one feet long, riding handsomely.

### A Forty-three-day Voyage

After forty-three days of living on dried fish and water we sighted the island of Mille, or Mulgrave, in the Marshall group. With the facilities I had, a broken sextant and a pocket compass, the deflection of which I averaged from sights taken on Midway, I was only four miles out in my latitude. Finding longitude position was out of the question, but by keeping well to windward and running along on a parallel of latitude, I knew that we would sight either Mille or Bonham. A glimpse of cocoanut husks told me that we were nearing some land, for as we proceeded the barnacles adhering to the husks were getting fewer and fewer, until at length we saw some that had not been long in the water. To this day I do not know what made me heave to on the night before sighting land (some presentiment, I suppose), for when I awoke in the morning the tops of cocoanut-trees were visible.

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(2) These lighters probably were left at Midway by the U. S. S. Saginaw, which was dispatched to the island in 1870 to dredge a channel through the reefs, the Pacific Mail having prevailed upon Congress to appropriate $50,000 for the work. The wreck of the Saginaw on Ocean Island in October, 1870, put an end to the scheme, the completion of which would have cost perhaps $2,000,000 instead of $50,000. The Pacific Mail did desire to use Midway as a coaling station, but it was to be for vessels of the Oriental line, the island being almost upon the Yokohama-Honolulu great circle, and not for the Pacific Mail's Australian steamers, as Captain Cameron conjectures. The San Francisco-Sydney service of the company was maintained only from 1875 to 1885. Stevenson refers to the supposed coaling station in "The Wrecker."—A. F.

We were well treated by the natives. The boy Moses and I felt very fit, in view of the voyage we had had, but Jorgansen had to be carried ashore. Some days prior to our making the island he was wandering in his mind. Now a word about Jorgansen. His actions were enough to convince anyone that he was no desperado. He assisted the Walker family to escape from the wreck, thus helping to save their lives. Furthermore, many an act of kindness he did for them, giving them fish and eggs, surrendering to them his room and what it contained in the shape of rude furniture and some bedding; he built a fourteen-ton schooner to enable them to get away, but Walker did not have courage enough to make the attempt. Poor Jorgansen, he's dead now; died in Mexico, I believe; Walker is dead, too; but if ever there was a white man Jorganson was one.(3) As for myself I have very little to say, except that my record is clear and will bear scrutiny. After I had saved the lives of Walker and his family it is too much to have my reputation blackened by him.

### Reports the Castaways

Before I started on this tack I left myself on Mille Island. There the schooner Ehukai, Captain Thomas, of Honolulu, called on a trading trip. The captain gave me passage to Jaluit, where the trading firm of A. Crawford & Company, 27 Market street, San Francisco, had a station. Mr. E. Morgan was manager. On the day after my arrival at Jaluit I reported to the German commissioner, Mr. Sonneschein, giving full details of the wreck of the Wandering Minstrel and the people left on the island. He promised to send a schooner to Midway at the first opportunity to take them off. Afterward I learned that the schooner Norma, Captain Johnson, took them to Honolulu.(4) I joined the firm of A. Crawford & Company, staying with them for about six years, and then came to Japan in my own schooner, which I sold in Kobe. American consular records will prove that.

I think that I can put you wise to the source of Stevenson's novel, "The Wrecker." Shortly after I engaged with the A. Crawford & Company firm I met Robert Louis Stevenson on the Janet Nicol, a steamer belonging to Henderson & McFarlane, an Australian or New Zealand firm trading among the islands. Boarding the Janet Nicol at the island of Tarama (Tarawa, Gilbert group?), I told Mr. Stevenson about the loss of the Wandering Minstrel and gave him a letter to our manager, Mr. Anderson, who had relieved Mr. Morgan, asking him to permit Mr. Stevenson to have access to my notes about the loss of the vessel, which were in the company's safe.(5)

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(3) That Jorgensen has suffered at the hands of his enemies may be quite true, but I must confess to a great disappointment that Captain Cameron did not recount the Dane's own side of the story. What his shipmates told of him was substantially this: Jorgensen and Captain Asberdine, alias Sanders, and a seaman named Brown went to a small islet of Midway to gather provisions for their proposed voyage to the Marshalls. Jorgensen returned alone with the tale that Asberdine had killed Brown and had committed suicide; he was thereupon tabu-ed, the boat that had been prepared for the voyage was stove in to prevent his making use of it, and the four remaining castaways found another in which they departed for the Marshalls. When they sailed Jorgensen was on the verge of insanity. This charge of wandering wits is repeated by Captain Walker, who says that he was about to shoot the Dane several times but desisted when Mrs. Walker interceded in his behalf. Captain Cameron admits that Jorgensen's mind gave way on their voyage to the south, but suffering easily might account for that.—A. F.

(4) Captain Cameron's calm, emphatic assertion that he did report the presence of the Wandering Minstrel's crew on Midway carries conviction. It puts an entirely different aspect on the whole affair, for to his apparent failure to speak of the castaways, or indeed to the statement attributed to him, that he, Jorgensen and the Chinese were the only survivors, were due the deaths of five persons or so, who succumbed to scurvy. Had Cameron been guilty of either of these acts, of omission or commission, he would have been to blame for the suffering and death that ensued. They have, in fact, been laid at his door up to this time. Moreover, he naturally was convicted, in the minds of those who knew only the one side of the story, of various minor misdeeds charged to him, such as making away with the best boat and deserting his shipmates. In this connection I may remark that Captain Cameron stated to Mr. Sooy that Captain Walker declined to join him on his voyage to the Marshalls in the small boat, because, said Captain Walker, the chance of rescue would be better if he remained on Midway. Thereupon Cameron asked whether any wished to accompany him, and Jorgensen and the Chinese said that they would go.

As for Captain Cameron's reporting to the German commissioner, I, for one, give complete credence to his statement. Yet why was nothing done to rescue the castaways? It is well established that the Norma found them quite by chance. Did the German commissioner send a vessel that never arrived, or did he forget to do anything? I am inclined to prefer a hypothesis wilder and vaguer, even seemingly absurd: On his way south from Honolulu in the schooner Equator in 1889, Robert Louis Stevenson discussed with Lloyd Osbourne the plot that eventually was elaborated into "The Wrecker." They wished to get a wrong crew on board a vessel; but how? "'I have it; the so-and-so affair.' For not so many months before, and not so many hundred miles from where we were then sailing, a proposition almost tantamount to that of Captain Trent had been made by a British skipper to some British castaways." This proposition, I shall explain for the benefit of those who have not read "The Wrecker," was that the marooned men should pay for transportation to civilization. Well, what if something of that nature did happen at Midway? And what place so logical as Midway: it is not far from Johnston Island, where the schooner Equator was sailing at the time of the conversation; the Wandering Minstrel's wreck was still fresh in the mouth of Honolulu; and Stevenson, moreover, had heard Captain Walker's own tale. But if something of this nature did occur, why has it been kept secret for thirty years? Here, I submit, is a first-class mystery. I wish that Lloyd Osbourne would unravel it.—A. F.

(5) This last paragraph harks back to a surmise, which I advanced in my former article, that the Midway cycle supplied Stevenson with the source of "The Wrecker," some of the scenes of which are laid on the island. I knew that Stevenson had heard Captain Walker's account, for he wrote to Sidney Colvin from Honolulu in 1889: "I am going down now to get the story of a shipwrecked family, who were fifteen months on an island with a murderer." (I would invite Captain Cameron's attention to the fact that in calling Jorgensen a murderer I was in excellent company.) Now comes Captain Cameron to say that Stevenson had access to his notes as well, which bears out my surmise all the more.—A. F.

Pacific Marine Review
The National Magazine of Shipping

576 Sacramento Street
SAN FRANCISCO, CALIFORNIA U. S. A.

Official Organ of the Pacific American Steamship Association

Subscription Price, per year (Domestic) . . . . . . $2.00
(Foreign) . . . . . . $3.00
Single Copies . . . . . . . . . . . . . . 25 cts

J. S. HINES . . . . . . . . . Publisher
B. N. DeROCHIE . . . . . . Business Manager
A. J. DICKIE . . . . . . . . . . Editor
ANDREW FARRELL . . . . . . Associate Editor
M. G. HEDIN . . . . . Advertising Representative

NEW YORK OFFICE
339 at 30 Church Street
M. B. STEWART, Manager

Pacific Marine Review is sold at all leading News Stands
Entered as second class mail matter at Postoffice
San Francisco, California

Published on the First of Each Month. Copyright
1922 in the United States by J. S. HINES

## PROSPECTS FOR 1922

WE are firmly convinced that the American merchant marine is entering 1922 in a much healthier condition than it entered 1921. Our reasons for this conviction are not based on any increase in freight offerings or on any great profits made by the operation of American passenger lines, on the Pacific or on the Atlantic, although evidence is not wanting that in some instances at least profits have been made. We feel, rather, that the mind of the Federal government at Washington has become engaged in a really determined effort to put the merchant marine on a stable basis and that the Shipping Board has at last begun to learn what is really involved in the commercial operation of ships.

We are, therefore, looking forward with a good deal of confidence to the future, gathering many crumbs of comfort from the sane and conservative promises of our national executive and from the wise and energetic executive management which is apparently being given to the various departments of the Shipping Board and the Emergency Fleet Corporation.

Promises approaching a pledge of some form of subsidy are evidenced in presidential messages, and we await with great interest the fruition of such promises, praying in the meantime that the executive and the Shipping Board and their advisory committees will find wisdom and strength enough to allocate the proceeds of such subsidizing plan in such wise as to insure permanent and reasonable profit for the American ocean-going foreign trade fleet.

## GOVERNMENT COMPETITION

ONE thing which could be done by the Federal government that would greatly assist the American merchant marine is the elimination of government competition, particularly in the matter of the Army and Navy Transport Service.

In the days before the war, when there were practically no American privately-owned lines in operation to many foreign ports, the transport service was of course absolutely necessary, but with many millions of tons of privately and government-owned merchant shipping laid up, it would seem to be the height of foolishness from a business standpoint for the Army and Navy departments to continue to operate this overseas transport service at great loss. It has been a fact in the past and undoubtedly is still that these departments, notwithstanding that they are operating their own ships at a loss, have in coast to coast service given the transportation of coal and stores to the lowest bidder, irrespective of nationality.

## ONE WAY TO SELL THE SHIPS

IT has been frequently rumored recently that there is a plan on foot to sell a limited number of the Shipping Board's steel freighters at a very low price per deadweight ton even as compared with present market values, provided the purchaser will convert the propelling units on these freighters to Diesel engines.

This course is one that we have often advocated in these columns and we hope now to see the Shipping Board embark upon it; more especially if, along with the low price, they were prepared to loan the capital at a reasonable rate of interest for the conversion.

On page 49 of this issue there will be found an article giving some information as to the possibilities of such conversion work.

The Diesel engine has proven its reliability as a marine motor during some twelve years of active sea service in large ocean-going vessels. While it may be said to be still in process of evolution, yet the overall economy of any motorship as compared with the best of steamers is so marked that at the present low tide stage of ocean freights there would seem to be no excuse for operating steamers if motorships are available.

## HIGH POWERED MOTORSHIPS

IN an article in this issue of Pacific Marine Review under the section devoted to motorships and oil engines, there is described the motor passenger liner Aba fitted with twin screw machinery of 6400 indicated horsepower. This represents the maximum power yet installed on any motor vessel, and when compared with the power plants in some of our steamers it seems very small indeed.

There is now, however, under advisement and undoubtedly soon to be ordered, an 18,000-ton motor liner for the Swedish North American Line, in which machinery of from 12,000 to 14,000 indicated horsepower will be used, probably on triple screws.

It is also very interesting to note that, as described in an article elsewhere in this issue, Mr. Sperry of New York has come before the American Society of Mechanical Engineers with a compound Diesel engine which he has been perfecting for some thirty years and which is now being built in units up to 100 horsepower, at so low a weight per horsepower as would indicate that, if proven reliable in service, his engine would certainly enable much larger powers than anything now available in engines of the internal combustion type to be used for purposes of marine propulsion.

This is especially interesting since it indicates that the development of the internal combustion engine for marine purposes will follow exactly along the lines of the steam engine development. The marine Diesel engines of today weigh about the same as the best of the simple marine steam engines of seventy-five years ago. Compounding in the reciprocating marine steam engine brought down its weight to limits so reasonable that with the increased economy ocean transportation by steam was launched into its great development. Marine engineers will, therefore, be glad to welcome any practical application of the compounding system to this most economical prime mover and will be watching the development of the Sperry engine with great interest.

We are constantly and measurably approaching the practicability of large ocean-going passenger liners with internal combustion fuel economy, and with the space economy made possible by the elimination of the boiler plant and the huge uptakes and funnels which now mark that class of ship, the larger the vessel the greater the power required and the higher the designed speed the more marked is the comparative economy over all for internal combustion engines as compared with steam.

## EMERGENCY FLEET ACCOUNTS

THE War Emergency Fleet is a finished product. All the freighters contracted for by that great corporation have been delivered or cancelled. The largest shipbuilding effort in human history is closed as far as active construction is concerned. The books of the corporation, however, are far from closed, and many millions of dollars that should be active in the promotion of business are tied up in just claims, in great part audited and allowed but still unpaid.

This condition arises from the fact that Congress refused to appropriate funds to meet Shipping Board deficiencies, and so the Shipping Board and the Emergency Fleet Corporation, being without funds, could not settle the claims. Many manufacturers of marine specialties and auxiliary machinery, dealers in paints and marine supplies, ship chandlers, and not a few shipbuilders, are more or less badly crippled in their respective businesses by the lack of these moneys.

It does not seem fair that the Federal government should ask these men to "hold the bag" on materials supplied on order at the then market prices just because conditions changed to the detriment of merchant marine revenues, particularly when it is a demonstrable fact that had the operation of the Shipping Board fleets in the years 1918, 1919 and the first half of 1920 been rightly managed, there would have been on hand a large surplus to meet these claims instead of an operating loss, and also when it is a well known fact that if the other departments of the government which were using Shipping Board tonnage, during the war and subsequently, had paid the ordinary charter hire due on such boats, the claims could all be settled.

Let's get busy and pay our bills.

## THE SHIPPING BOARD

REPORTS coming from Washington recently indicated that the United States Shipping Board is rapidly getting on an efficiency basis. Much "dead timber" has been dropped from the salary rolls; departments have been consolidated; repair and maintenance work has been systematized; and the result is not only seen in the reduction of the monthly deficit but also in the renewed confidence on the part of steamship operators.

As was to be expected, the reorganization of the Emergency Fleet Corporation into three main departments under such competent leadership as that given by Messrs. Love, Smull and Frey began very quickly to bring order out of chaos, and the later appointment of J. W. Powell to the executive leadership simply insured that these department leaders would be given free scope for the development of their plans so long as results were obtained.

J. B. Smull, in the department of allocations and charters, has consolidated and rearranged the Shipping Board services on both the Atlantic and Pacific Coasts in such wise as to give better service with a minimum of duplication and overlapping, thereby saving much money for the taxpayers. That he has been able to accomplish this without undue friction speaks volumes for his executive ability.

W. J. Love, as vice-president in charge of the traffic department, has quietly and steadily forged the broken connections and replaced the missing links in our chain of foreign commerce, and through his world-wide personal connections is making his office of tremendous benefit to American shippers and ship operators. Incidentally, Mr. Love has introduced a refreshingly healthy tone into the publicity material of the Emergency Fleet Corporation.

A. J. Frey, in charge of physical operations, has been instrumental in checking one of the largest, but to the ordinary citizen least apparent, leaks in the conduct of the Emergency Fleet Corporation's business. Ships laid up on mud flats have to be maintained in condition for service. Prior to the advent of Mr. Frey this maintenance work was carried on in an unsystematic, haphazard manner. With his characteristic energy, this Pacific Coast steamship expert organized and consolidated his maintenance squads and has succeeded in showing better physical condition in hulls and machinery and at the same time a saving of from three to five millions per annum.

Much credit is due Albert Lasker for the wise selection of these heads of departments and of the executive of the Emergency Fleet Corporation. In our humble judgment, however, Mr. Lasker has performed an even greater service than this for the American merchant marine in that he has boldly "roped and thrown" that "Irish bull" variously referred to by his predecessors as "Coal Oil Johnny," "American Ingenuity," or "The Flag," and has put squarely before the American people the idea of the merchant marine on its proper commercial foundation. Read the extracts from his Milwaukee speech on page 2 of this magazine and ponder the boldness and the weight of them as compared with some former Shipping Board propaganda.

The American merchant marine has been sick without knowing it for some time before the present crisis was reached. We may now take courage from the knowledge that the doctor appreciates the true condition of the patient and has taken off his coat to stand by and pull through to a successful recovery.

## HARBOR IMPROVEMENTS

DURING the war—how trite that phrase is getting to be!—the work of harbor improvement, together with every other form of peaceful constructive activity, was practically stopped except in those cases where it affected the transportation of raw materials. At the present time and for the last year or year and a half there has been an almost feverish activity in getting ready for huge harbor developments all over the world.

Practically every port in Europe from the small fishing havens to the most important of the first-class harbors, such as Antwerp in Belgium, Rotterdam in Holland, Marseilles in France, London in England, has under way or projected development schemes and construction amounting in the aggregate to almost unbelievable sums. The same fact holds good for the principal ports of North America and for practically every beach resort, fishing village, river mouth, and estuary along the whole of the Canadian and United States coasts.

The Philippines, Dutch East Indies, China and Japan are building new ports, enlarging old harbors, lengthening breakwaters, strengthening piers, putting over the reclamation of large areas of tidal flats, getting ready apparently for a tremendous expansion in the carriage of freight by sea.

In the aggregate this harbor improvement work constitutes one of the largest potential markets for the products of industrial and construction engineering plants. We are persuaded that American firms will have their full share of the business arising from this activity, and we shall make it our purpose during the coming year to keep our readers informed in advance of the details of the principal schemes.

## TRAINING IN FOREIGN TRADE

ON page 722 of last month's Pacific Marine Review, under the caption of "European Marine Notes," a young Californian traveling abroad calls our attention to the East Asiatic Company's training ship Kobenhavn. There is a lesson in the building, equipping and operating of this vessel to which the United States Shipping Board and American ship operators may well give heed.

The Kobenhavn is a steel sailing ship, fully rigged, 5-masted, with auxiliary engines of 600 horsepower and a feathering two-bladed propeller capable of driving the ship under ordinary load sea conditions at a speed of 7 knots. The hull is of the clipper line; the sail area and spars are designed of ample proportions; and the Kobenhavn should sail in a stiff breeze at a much faster clip than her engines will carry her.

Under the guidance of experienced engineer and navigating officers, this vessel will trade in all the ports of the world, and her crew of from 50 to 80 young Danes will be trained not only in navigation and in motorship engineering, but in all of the nice problems and delicate adjustments which are met with in foreign trading. We are very fond of sitting at home, patting ourselves on the back, and assuring ourselves that American ingenuity and resourcefulness will put us through when we meet difficulties in the field of foreign trade, but we often find that this ingenuity and resourcefulness has put us through in such a way that never again can we get within a thousand miles of the same customer.

We might take a leaf out of the book of our friends, the Danes, and other European nationals and send out some of our best young men under competent leadership for training in foreign trade.

## PACIFIC MAIL AND THE 535'S

IT is to be hoped that the Shipping Board will give careful consideration and a favorable response to the request of the Pacific Mail Steamship Company for the allocation of two additional vessels of the 535 class for its San Francisco-Honolulu-Orient service. The three steamships now operated by the company are insufficient to handle the business; the number is incompatible with the past and present standing of the Pacific Mail in transoceanic trade and with the just claims of the port of San Francisco, whose interests, in this case, are bound with those of the company.

With the three vessels now in operation the Pacific Mail is enabled to maintain approximately monthly sailings. Those of the Toyo Kisen Kaisha, a premier Japanese line, are much more numerous, as is attested by the schedule for January, which includes departures of three major vessels, the Tenyo Maru, Korea Maru and Shinyo Maru, within three weeks. In spite of such vigorous competition, the Pacific Mail has booked its passenger accommodations to March, and on the score of freight is sending full cargoes west and its eastbound cargoes, though by no means full, are quite satisfactory in the existing state of trade. A record such as this, especially during times when many Shipping Board vessels are notoriously incurring large deficits, is sufficient to entitle the Pacific Mail to most favorable consideration.

In its request for more vessels the company has no desire to run counter to any claims that may be put forward by the competing ports of Seattle, Portland and Los Angeles. No comparisons are drawn. The Pacific Mail's case is left to rest on its merits, which quite evidently are of a high order. Fifty years in the trans-Pacific trade have served to build up for the Mail an unusual organization, many of its representatives in the Far East having been in that part of the world for a long time, and also have created for the company an excellent reputation among shippers both American and foreign. Time was, as anyone with a memory of even a few years may certify, when the Pacific Mail and the two liners of James J. Hill alone displayed the United States flag in the Orient; and, although that flag is seen more frequently today than it was, Yokohama, Kobe, Shanghai and Manila still regard the Pacific Mail and the best in American shipping as synonymous terms.

In travel to the Far East the San Francisco-Honolulu-Yokohama route has been able to hold its own with the shorter distance and quicker passage of the Seattle-Yokohama steamships. That this should be true is not at all surprising, for California itself has long been a favorite resort of travelers and Honolulu is not without its attractions, and the southern weather usually is much more pleasant than that of the northern great circle track. These various factors have enabled the Toyo Kisen Kaisha, Pacific Mail and China Mail to retain the good-will of travelers to an extraordinary degree; to such an extent, indeed, that the Pacific Mail, as was stated, has booked its three 535 vessels up into March. So far as freight is concerned, Japan has turned to Seattle to a surprising extent during the last few years, but many Chinese still insist upon booking cargo by way of San Francisco. For these two reasons the Shipping Board appears certain of good business should it allot two more steamships.

The fact remains, also, that the Shipping Board should be bound by the pledge of the preceding board, which promised five liners to the Pacific Steamship Company and five to the Pacific Mail. The first lot have been delivered and are in operation. The second pledge remains to be made good in part. But relying upon it, the Pacific Mail withdrew its own vessels, Colombia, Venezuela and Ecuador, and placed them in the intercoastal trade, because the three steamers were small and slow and because of that were at a disadvantage in competing with larger and faster vescels, although they were quite popular with travelers. In short, it does appear that the Shipping Board is morally bound to deliver two more steamers, even if other reasons were not as potent as they are. That they are potent, however, appears indisputable.

# SAFETY ON SHIPBOARD

### By R. J. ALEXANDER

OCEAN transportation, both of passengers and cargo, has always been regarded by the landsman as an occupation full of hazard. Since long before the days of the wisest son of David, "the way of a ship in the midst of the sea" has been incomprehensible to the average citizen. The long lanes of the ocean trade routes bristle with mystery; along their dark green, foam-tipped ridges lurk hidden dangers that lure the sons of men to their destruction. Such has always been and to a great degree still is the popular conception of sea travel.

The same idea has crept into much of the official language of shipping and marine insurance. Thus we have the old merchandizing term of "adventure" describing a trading voyage, and the many archaic and elsewhere obsolete terms describing special marine risks in the standard policies. That there is much foundation for this feeling and these terms no one familiar with the history of the world's merchant marine will attempt to deny.

Anyone, however, who takes the time to examine the statistics of travel will have to admit that, taken by and large, sea travel is safe travel and that, judged by the loss of life as a percentage of passengers carried, it is far safer than the great majority of methods of transport ashore.

Marine disasters involving great loss of life furnish wonderful copy for the newspaper reporter. On the stories of the survivors, on their sufferings and their exposure, he can give full rein to his imagination added to theirs and produce thrillers good for four-inch headlines. Such stories make a deeper impression on the popular mind after one wreck than would the faithful report of ten years' daily service without accident.

Since the earliest times in the art of naval architecture a great deal of thought has been directed toward the problem of safer ships. Much national and international legislation and agreement has resulted, and at the opening of the twentieth century ideas as to safety standards in hull construction, machinery and equipment had become fairly well standardized. On the North Atlantic liner routes in the nineteen years ending 1911 there had been carried 9,500,000 passengers with a loss of life due to marine casualty of only 85, less than one one-thousandth of one per cent. Then came the loss of the Titantic, and the whole world sat up with a shock to revel again in the mysterious dangers of the sea.

Out of the circumstances surrounding the loss of the Titantic arose a great flock of inventions designed to save life at sea and a great many designs for constructing unsinkable ships. There also arose a demand for an international conference on shipping problems, and a convention was held at London in 1914 which formulated certain recommended rules for standards of safety appliances, for construction of hulls, and for installation of wireless telegraphic apparatus. This convention of London had scarcely finished its labors when the whole civilized world was thrown into confusion by the ambitions of the German Empire, and for four years the powers that were the principal signatories at that convention set themselves to the effort of destroying life much more effectively than they had joined in the agreement to save.

Just now the problem of safety at sea is again prominently before the international marine world through the international shipping conference held in London November 23-26, 1921. At this conference was indicated the wisdom of allowing commonsense to rule and getting away from the great mass of conflicting regulations which, as one British shipowner put it, "were passed in a mood for penance."

The conference passed resolutions based on the wise foundation that "safety of life at sea depends upon the care of the navigator and upon the type and design of the vessel much more than upon life-saving appliances." These resolutions call for life-saving appliances for all on board ocean-going passenger vessels, these appliances to consist of both boats and buoyancy apparatus; boats to be limited to the greatest number that can be carried and promptly handled under davits with due regard to the safety of the vessel. An automatic transmitting and receiving device for wireless S. O. S. signals was recommended, and a simplification of the rules governing wireless installations. The full text of this resolution is as follows:

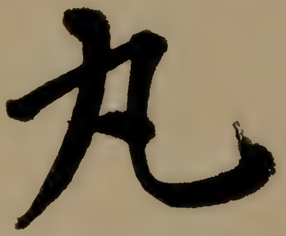
> That this conference, representative of the shipping industry in every part of the world, approves the following principles as the basis of any future consideration of that part of the problem of safety of life at sea which more particularly relates to life-saving apparatus:
>
> BOATS AND OTHER BUOYANCY APPARATUS
>
> (1) Safety of life at sea depends upon the care of the navigator and upon the type and design of the vessel much more than upon life-saving appliances.
>
> (2) The stability and seaworthy qualities of the vessel itself must be regarded as of primary importance, and every other provision made against possible disaster must be subordinated to that primary consideration.
>
> (3) In regulations providing for boats and other life-saving appliances, it is essential that the safety of the vessel itself should not be impaired and that her decks should not be unduly encumbered, and that prompt handling of those boats which are adequate for all but extraordinary and exceptional disasters should not be hampered by the provision of additional boats.
>
> (4) That ocean-going passenger vessels, as defined in Article 3 of Convention of 1914, should carry life-saving appliances for all on board, which should consist of both boats and buoyancy apparatus; the number of boats should be the greatest which can be carried under davits with due regard to the safety of the vessel and the prompt handling of such boats; it is undesirable to formulate hard and fast rules for the design of buoyancy apparatus, each of which should be considered on its merits so as to afford the greatest possible scope to shipowners, their naval architects and shipbuilders to devise efficient apparatus and to provide for the stowage of such apparatus in a manner best calculated to attain the object in view.
>
> WIRELESS TELEGRAPHY
>
> (5) That inasmuch as the International Convention becomes valueless if any contracting government applies different rules, whether less or more severe, to all ships visiting her ports, the attention of governments signatory to the convention should at once be called to instances in which the international accord of the convention has been disturbed by particular regulations in order that the disturbance may be removed.
>
> (6) So long as any merchant ships are compelled to carry wireless, it is essential that the condition of a free market in installations should be maintained.
>
> (7) The legal obligation to install wireless telegraphy on merchant ships is justified only by the desire to save life, and shipowners should be left complete freedom to deal with the improvement or amplification of their wireless installation for commercial purposes or for the convenience of passengers.
>
> (8) As the introduction of wireless telegraphy has revolutionized the problem of saving life at sea, and as it has already been proved that the attempt to maintain constant communication by human agency cannot be made effective, an automatic alarm device should, as soon as practicable, be approved and permitted to take the place of the human watchers as provided in Article 34 of Convention 1914, and if necessary for this purpose, the International Code should be altered in order that the alarm call can be taken by an automatic device.

**(Continued on Page 52, Industrial Section)**

# "MARU" UNVEILED

### By ANDREW FARRELL

IN spite of Herbert Spencer's doctrine of the unknowable and Schopenhauer's philosophy of pessimism, in spite of Villon's plaintive query concerning the whereabouts of the snows of yesteryear and Mr. Einstein's insistence upon the absolutism of relativity, there really are only two puzzles of the first magnitude. The one is: What will be the course of Rufus Rastus Johnson Brown when the rent comes roun'; the other, and by far the more enticing, because it has nothing to do with the mercenary, is this: What is the meaning of the word "Maru," with which the name of every Japanese merchant vessel ends? Time was when Rufus Rastus Johnson Brown was not troubled with any question as to what he should say to the landlord, but the memory of man runs not to those Utopian years when "Maru" was unheard of; time will be when Rufus Rastus and the entire human race need not worry about rent, but even then a few million disembodied shades will discover to their sorrow that "Maru" has not ceased from troubling and that the weary by no means are at rest.



**A prospective patron of the United States mails once asked a postal clerk: "Is this letter too late to catch the Siberia Mah-ru?" The underpaid employe of the United States government, with intentions quite as benevolent as those of the inquirer, replied: "The Siberia Ma-roo, eh? Let's see." The incident illuminates the truth that the pronunciation of "Maru" is decidedly individualistic, like one's religious beliefs; but that is not equivalent to saying that any pronunciation is correct. "Maru" is pronounced as though it were spelled "Mah-ru," not "Maroo," the accent being placed on the first syllable. But what free-born, rock-ribbed, copper-lined, whip-his-weight-in-wildcats citizen of the United States will concede the right of a foreigner to dictate how any word, even one of the alien's own language, shall be pronounced?**

### What Sam Clemens Said

Great minds have attacked the great puzzle and have been repulsed. Witness the following quotations:

That man Brown staggered down to breakfast this morning looking hollow-eyed. "Mr. Brown," I remonstrated mildly, "I warned you against that palm-tree gin—" "Pam-tree gin be blowed!" says he. "My revered grandmother's corn-cob pipe!" he goes on. "It ain't pam-tree gin that's the trouble. After putting up with santipedes, and cockroaches, and fleas, and lizards, and red ants, and scorpions, and spiders, and mosquitoes, and missionaries, and being bit by a scorpion that carried an oxy-acetylene torch in each hand, and having to prop my mouth open with a boot-jack to keep from getting lock-jaw, after all this," Mr. Brown says, "I've got to put up with them new blood-suckers." "What do you mean, Mr. Brown?" I inquired. "Here they come in the dead of night," he rattled on, paying me his usual respectful attention, "when the house is still and I should sleep, only I can't because of your snoring; and they rattle the windows and now and then one gets his jimmy in the lock of the door and gives it an awful heft—" "Calm yourself, Mr. Brown," I said, looking as usual on the bright side of things. "What is after you?" "Sam," he screeches like a tom-cat, holding out his shaking hands to me, "them Ma-roos are tracking me down."—Uncollected Works of Sam'l Clemens, Hamfat, Step-father & Singh, Bombay, 1933.

### An Unfamiliar Quotation

When Dawn the rosy-fingered stirred the shepherds of the host, and winged speech passed among the heroes, the goodly Odysseus, waster of cities, sat apart from the throng, pondering many things in the depths of his heart. . . . And the sun set and all the ways were darkened, and the man of guile took no joy in the honey-hearted wine and the feast of roasted flesh, but thought upon Father Zeus and Hermes the swift-footed and the grey-eyed Athene and the meaning of "Maru."—Odyssey of Homer, Lang's translation, xvikw, 1-28.

Inasmuch as two individuals as widely diverse in their times and places and talents as Mark Twain and Homer have failed to unravel "Maru," there is little enough hope for anyone else. But the attempt must be made, just as small boys must eat green apples and locusts and grasshoppers return and the seven-year itch run its course.

* * * * *

When a Japanese is asked by a curious Caucasian as to the meaning of "Maru" he makes one of two replies. He either says off-hand, with a flash of teeth and the most courteous of Yamato smiles: "It means 'going-around' or 'circle'"; or he peers vaguely and penetratingly into space, as though he glimpsed Nirvana but was not particularly interested in the vision, and says soulfully: "I do not know." Then he speaks the precise truth, neither more nor less; but the suspicious Caucasian departs with hate in his heart and various unecclesiastical exhortations in his mouth, more convinced than ever that "Maru" is the password of the Japanese equivalent to the Royal Nest of Field Mice or some other American fraternal order.

### The "Going-around" Theory

Let us consider first this "going-around" or "circle" explanation. Seven years ago, when I first began to trail "Maru" to its lair, a justly-popular American periodical dropped this theory upon a palpitating world. Thereupon I hastened to a Japanese newspaper office with the news that "Maru" had ceased to be a mystery. The young men greeted my elucidation with prolonged laughter. "The 'Maru' that means 'going-around' is not the 'Maru' that appears on the bows of a steamship," said they. With a humble and a contrite heart I picked up Inouye's Japanese-English dictionary, which may be regarded as an authority. On page 1002 I found two "Marus", one meaning "circle", the other "full, complete, whole, all", and the corresponding Chinese ideographs, neither of which was the character that I had seen that morning on the bows of a liner of the Toyo Kisen Kaisha. (For some reason or other, Mr. Inouye does not even include the shipping "Maru" in his dictionary.) I was, therefore, ready to join in laughter at the expense of Samuel G. Blythe and the S. E. P. (advt.). Quite evidently "Maru" did not mean "circle" or "going-around";—"but," said the voice of one of the Japanese reporters in my ear, "sometimes the 'Maru' of the ship is used to express 'circle'; perhaps," with a saddened shake of the head, "Mister Blythe is a little right."

For another reason the "circle" theory leaks in the seams. "Maru" as part of the names of vessels must be of considerable antiquity (however, see Mr. Doi's explanation below); yet as every school-boy knows, or should know, Japanese navigation of the high seas was resumed only at a relatively recent date, for the construction of craft exceeding 50 tons gross was forbidden from 1635 to the opening of Japan by Perry in 1853, so that Japanese shipping, being small and hardly seaworthy, scarcely could have done much "going-around" during those 218 years. Surely these two centuries were time enough for the significance of the word, if it ever did hark back to the idea of a vessel circling wide waters and returning to port, to have been forgotten by men who knew only their own little islands. Besides, as I said before, the Chinese ideographs of the shipping "Maru" and the circle "Maru" are not the same. Let me translate this statement into more intelligible terms: in the English language are two words, pronounced alike but differing in both spelling and meaning: one and won. However much they might lead to confusion in the spoken tongue, no person, except the most illiterate, would confuse the two in writing. In the case of the two "Marus" the Japanese would accord the same pronunciation, but the ideographs, or the written forms, are not susceptible to misuse, and it is the ideographs, in a non-phonetic language, to which man must cling. It is therefore difficult to believe that the Japanese have confused two ideographs because the spoken equivalents are identical. Then what has occurred? Let him answer who can.

### Not Quite Settled

That there are different "Marus", entirely distinct ideographically even if identical phonetically, appears to have been established. But what shall we say in reply to authorities who blow down the whole flimsy argument? Witness Basil H. Chamberlain, unquestionably the greatest Caucasian authority on Japan: "'Maru' means round"; or a recent little essay by Guchiro Narita, himself of course a Japanese: "But 'Maru' means ball or circle"; or a statement of K. Doi, Pacific Coast manager of the Toyo Kisen Kaisha: "One of its earliest and most common significations . . . is 'round', that is, a circle. . ." These authorities certainly outweigh the young Japanese newspaper men who laughed at Mr. Blythe and they must be accepted as outweighing, in some obscure manner, the definitions and ideographs of the dictionary.

In "Things Japanese" Professor Chamberlain says: "It is often asked: What does the word 'Maru' mean in the names of ships—as Tokyo Maru, Sagami Maru, Hiryu Maru, etc.? The answer is that the origin of the term is obscure. 'Maru' means 'round', but how came ships by so inappropriate a name?

"The first thing to note is that in former times ships had not a monopoly of the name. Swords, musical instruments of various kinds, pieces of armor, dogs, hawks, and the concentric sections of castles, were called 'Maru' also. The probability is that two distinct words—maru and maro—have flowed into one, and so got confused. To name the concentric sections of a castle 'maru' ('round') was but natural. The word 'maro', on the other hand, is an archaic term of endearment. Hence its use in such ancient proper names as Tamura-Maro, a great general who subdued the Ainos; Abe-no-Nakamaro, an eminent scholar of the eighth century; Okino-Maro, a favorite dog of the Emperor Ichijo, and so on. The warrior's pet sword, the sportsman's favorite dog or hawk, the oarsman's boat, would naturally come to be distinguished by the same half-personal name, much as the English sailor or engineer calls his ship or locomotive 'she'. When the ancient word 'maro' ceased to be understood, it would easily slide into the more familiar maru, by the alteration of the final vowel, o and u being particularly apt to interchange in Japanese.

"Observe that 'Maru' is applied to merchant vessels only. Men-of-war take 'Kan' instead, as Maya Kan, Asama Kan. 'Kan' was originally a Chinese word, meaning 'war-vessel'. It is not pronounced kan in China itself, and is no longer there used in the same sense."

The last paragraph no longer holds, for Japanese warships do not take "Kan" today. Indeed, some Japanese assert that 'Maru' formerly was applied to men-of-war, but that the practice ceased about sixty years ago.

### What a Japanese Says

Here follows an explanation by Mr. Narita, a sentence of which was quoted above:

"There are some cases where there seems to be conflict between the name of a thing and the thing itself; for instance, all Japanese ships" (I assume that he means merchantmen only) "have 'Maru' in the end of the name. But 'Maru' means ball or circle.

"From what I observe, not a few gentlemen appear to be perplexed how to answer a foreigner's question—'Why is "Maru" in the end of a ship's name, in spite of the fact that a ship is long in its shape, not round?' However, there is a certain reason why 'Maru' is added to the names of all ships.

"In ancient times the word 'Maru' meant the male sex, and 'kuge' (noblemen at court) in old times added 'Maru' to the end of their names, as 'Hitomaru', 'Kiyomaru', 'Semimaru', etc.

"Until about the end of the Tokugawa regime or near the beginning of Meiji" (that is, about 1860), "court nobles called themselves 'Maru'—with the same meaning as 'Maru'—for first person, 'I'. Some older names have the termination 'hiko', having the same meaning.

"As stated above, 'Maru' in Japanese was a very noble word.

"Therefore, when castles were fortified they were named with 'Maru' in the end of the main part of the name, as 'Honmaru', 'Ichinomaru', 'Ninomaru', Demaru', etc.

"When 'gozafune' were built (vessels for use of the Shogun) they were as a floating castle and were named with the same name.

"After that shipowners followed the custom and at present all Japanese ships from the smallest to the greatest have 'Maru' at the end of the name.

"A ship in English is considered as feminine, but in Japan they may be considered as of the masculine gender from this origin."

### The T. K. K. Manager Speaks

Mr. Doi's explanation is similar:

"The word 'Maru' is one of the oldest words in the Japanese written language. Its original derivation is lost in the mists of antiquity and, as it has been handed down from our ancestors, a number of different meanings have been ascribed to it. One of its earliest and most common significations, because it is the literal translation, is 'round', that is, a circle, which being followed further also means 'complete', or 'perfect'. This is a literal meaning, but it does not appear how with this signification it came to be applied to the sea and ships. It was also used to indicate something of great value—something precious, particularly as applied to one's children.

"Thus in early days, the son and heir of the house was given a special name to which was added the suffix 'maru', signifying the place of honor and the great value or importance of his person, to his family or house. Later on, in history, it became the fashion to apply the word to the castle or home of the ruling shogun or daimyo, as the feudal lords were then called, and this prevailed for a long time. In fact, the word 'Maru' soon came to be indelibly associated with the castle or home of the lords. These castles, as can still be seen by the old ones that are preserved, were all made along the same pattern. They had a tower for watching sentinels and for defense at either end and one in the center, through which gate entrance to the fortress was given.

### Of Recent Date?

"The application of the word to ships came from this source. When Commodore Perry visited Japan in his steamers, they were the first vessels of the kind the Japanese people had ever seen. As they loomed up out of the fog and mist that covered Tokyo Bay on that day, just off the present Kanagawa, those who saw them could only describe them as floating 'Marus' or castles, and so by this name the foreign ships became known. As time passed and the Japanese themselves became builders and operators of ships, the name stuck to them, until it was generally accepted in connection with large vessels.

"This is the usual and universally accepted version of the meaning of 'Maru', but there are several others equally interesting and much more romantic and poetic. Two of these are particularly fascinating.

"As I said before, the original use of the word was to indicate 'roundness', 'completeness' or something of great value. It is said that this latter interpretation first came to be used because of its application by one of the highest lords of the land to his oldest son and heir, 'the precious one'. As the nation grew in power and as the shipping developed, the great sailing ships that went out upon the seas with their precious freightage, sometimes held the fortunes of their owners and their safe return or loss meant wealth or ruin, as the case might be. The vessel which was sent forth on its voyage was, therefore, sometimes referred to as a 'Maru'—precious one—and thus it is said the name came to be adapted in reference to ships.

### More Poetic, Less Authentic

"The last explanation of the term 'Maru' is more poetic, but is not more authentic than the others.

"It is also taken from the original meaning of the word, that is 'round' or 'complete', which when expanded somewhat is given a new significance. This is to indicate a condition of all-completeness, or something all-surrounding or all-embracing. In those days of antiquity, to the Japanese the one thing of an all-surrounding nature that was most apparent to all was the sea, which surrounded and bounded Japan, the island kingdom, on every side. For this reason, it was said by some that the word 'Maru' was applied when reference was made to the sea, and thus it came to be associated with ships and shipping.

"This is an unusual definition and one that is not often seen in print, but it has been handed down from the fathers and as such is worthy of consideration. From the standpoint of beauty of conception and poetic fancy, it is perhaps the most appropriate of them all."

Several years ago I ran across another explanation, interesting and poetic even if unconvincing. It appeared in a China newspaper and was credited to Captain Holm of the steamship Kwanto Maru:

"In a sense the word 'Maru' as applied to vessels means nothing in particular. There is, however, a beautiful little story, a sort of legend, from which, a Japanese professor told me, originated the word 'Maru' for ships. Once upon a time the sun and moon got married, and they had a baby in heaven, or wherever it was. This child fell down on earth and landed on a lotus flower. He was picked up, and went on growing and became a big warrior who came across in a vessel called Maru and conquered Japan. Subsequently, about 5000 years ago or something like that, he became emperor of Japan. Since that time every class of vessel or whatever it may be has been called 'Maru'. That is how the name 'Maru' came into existence."

It appears that someone, whether the captain or his informant, has been taking liberties with some of the legends of the Sun-goddess. The story does, however, serve as an example of the countless hypotheses that go the rounds.

### A Substantial Accord

As for the explanations of Messrs. Chamberlain, Narita and Doi, a somewhat surprising consensus is discernible. "Maru" applied to castles and then to ships; "Maru" or "maro" a term of endearment or of great worth: here is substantial accord. The two explanations, or rather both compressed into one, may be accepted by those who demand precision.

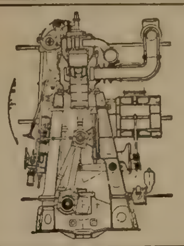
But why demand precision of the Japanese when we are imprecise ourselves? How many explanations are there of the derivation of the word "California"? Is there any satisfactory explanation of "Canada"? A tale that is at best apocryphal is told to account for "schooner". Here is such a common slang phrase as "23 for you", and who knows surely how it originated? The most satisfactory surmise is that it was derived from Dickens' "Tale of Two Cities", although it is evident that the person who fastened "23" on our speech never had read anything more advanced than the story of Goldilocks and the Three Bears.

### Here Is the Truth

Those who do not insist upon imprecise precision may be satisfied with this explanation of "Maru": it is a conventionalism, an integral part of the name of every Japanese merchant vessel, from the humblest fishing-sampan to the greatest ocean liner; its origin at best is speculative; it has no translatable meaning, perhaps no meaning whatever; if the Caucasian could imagine the letters "S. S." remaining in use long after the word "steamship" itself had been forgotten, he probably would have a case analogous to that of "Maru."

This brings us back, as Maeterlinck would say, to the threshold of the mystery. After all this "going-around" we have returned to our starting place.

# Oil Engines and Motorships



## TWO NEW ALL-AMERICAN MOTORSHIPS

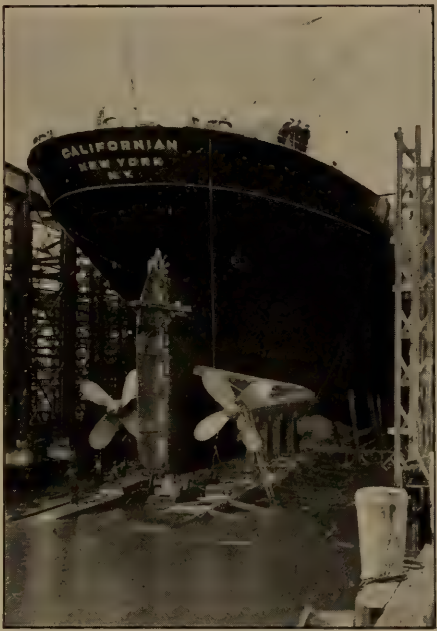
**Always a pioneer, the American-Hawaiian Steamship Company is now leading the way among American steamship companies in first-class ocean-going motorships. This company was the first American company to use fuel oil under the boilers of its steamships and the first to establish a purely freight coastwise service.**

THE twin screw motorship Californian was launched at the yard of the Merchant Shipbuilding Corporation, Chester, Pennsylvania, November 14, 1921.

The Missourian, a sister motorship to the Californian, was launched December 14, 1921, at the same yard.

The launching of these motorships marks the advent of the Merchant Shipbuilding Corporation into the field of large full-powered Diesel engine freighters, and the placing of this corporation in the foremost rank of progressive shipbuilders of ships of modern type.

The only American-built ship comparable with the Californian and Missourian is the William Penn, whose engines were built in Denmark and installed in a hull originally intended for geared turbines.

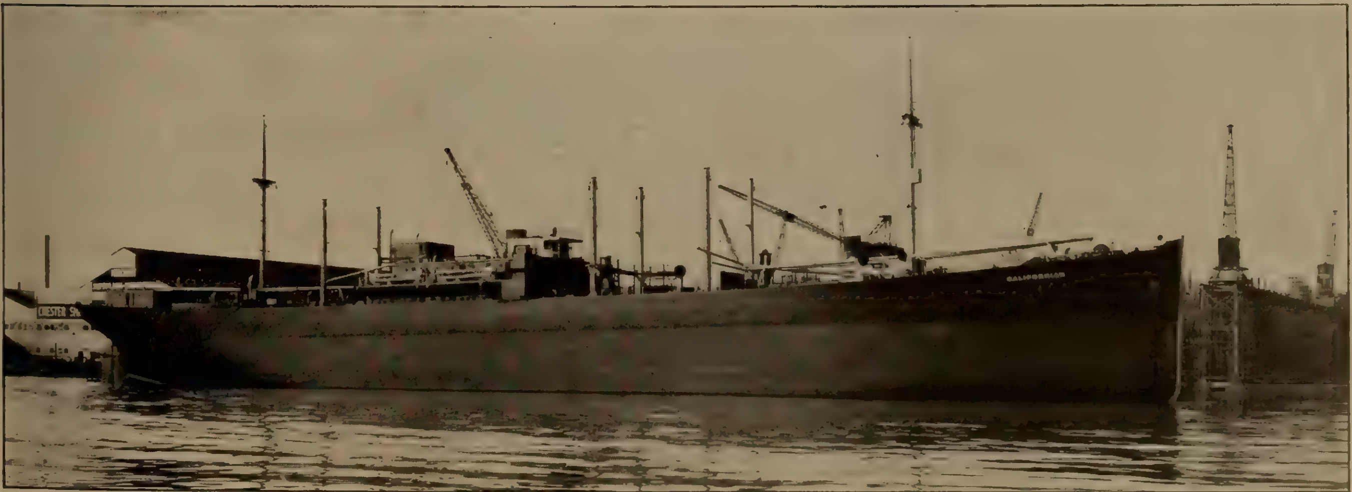


Stern of motorship Californian just before launching

For long voyages, the motorship will soon be regarded as the desired type. This seems to be the generally accepted opinion, judging from the numerous inquiries received in reference to the Californian and Missourian upon the efficiency and economical points in question.

Evidently prospective ship-buyers are studying the problem with keen interest. Recent British ship construction reports show that there have been less motorship cancellations than there were steam propelled ships. German shipbuilders have very actively taken up the construction of Diesel driven motorships. American ship-owners are beginning to appreciate the situation and desirability of developing the construction of ship types similar to the Californian and Missourian.

The initial cost of equipping these new types of motorships with internal combustion engines did not deter the directors of the American-Hawaiian Steamship Company, whose ships are operated by the United



Motorship California in the stream just after launching

American Lines, from appropriating the additional investment, because they were assured by the officers and technical staffs of the owners and builders that the efficiency and economy effected would finally justify the expenditure.

It is believed by the advocates of the motorship that it would be a progressive step in the upbuilding of the American merchant marine to convert at least 50 per cent of our existing freighters and passenger freighters, which are tied up, to Diesel or Diesel electric power.

### Best Type

The Californian and Missourian are considered the most acceptable type of motorship for the establishment and maintenance of long distance voyages for both cargo and passenger carrying trade or for combined cargo-passenger routes. Both are equipped with the most modern, efficient and economical machinery and commercial appliances known today.

The size and tonnage of these motorships are the outstanding features for economical service. The lines of the Californian and Missourian especially distinguish them for their elegance and practicability, while the quality of workmanship is superior in every detail—the sample product of a new type of cargo vessel in an old shipyard which has been building ships for more than sixty-two years, and which continues to hand down the enviable motto of "The shipyard with a tradition."

In order to conserve length, the quarters amidships in these vessels are two decks high and relatively short, giving a maximum length for hatches and cargo handling gear. They are rigged with two masts and six king posts, carrying twenty-one booms, one of 30 tons capacity, one of 10 tons, eleven of 5 tons, and eight of 3 tons. These serve seven hatches, all 18 feet wide and of varying lengths, the longest being 35 feet.

All masts, posts and booms are of steel, the masts being of steel right up to the trucks, eliminating the usual wooden plug top masts.

All machinery for these two vessels is being installed under a separate contract by the William Cramp & Sons Ship and Engine Building Company, Philadelphia. The ships are being taken to the outfitting dock at Cramp's yard for installation of this machinery.

The cargo handling machinery for these ships has been most carefully selected, and consists of fourteen double-geared winches and two Shepard Crane & Hoist Company's winches on each ship, the fourteen winches for the Californian being manufactured by the American Engineering Company and the winches for the Missourian were made by the Maine Electric Company. Each winch is driven by a 30 H. P. electric motor of the "Mill Type." The motors and the controllers for the Californian were supplied by the Westinghouse Manufacturing & Electric Company. Those for the Missourian were furnished by the General Electric Company.

The propelling machinery consists of two Burmeister & Wain 6-cylinder, single-acting, 4-cycle Diesel engines of the cross-head type. Each engine is rated 2250 Diesel I. H. P. at 115 R. P. M. Cylinders are 740 mm. diameter by 1150 mm. stroke. Thrust bearings are of the horseshoe type, and the 14-foot diameter propellers are manganese bronze.

Electricity for engine room auxiliaries, deck machinery, etc., is generated by four 65 K. W. direct current 230 volt generators each direct connected to a two-cylinder, four-cycle Diesel engine. At sea only one set will be required, and in port a maximum of three, so that there always will be a stand-by set.

Both main and auxiliary Diesel engine sets are nearing completion in the shops of the William Cramp & Sons Ship & Engine Building Company, Philadelphia.

All deck machinery, including windlass and steering gear and all engine room auxiliaries, except one small auxiliary steam driven air compressor for charging air bottles, are electrically operated. The steering gear is electric hydraulic drive.

There is one 120 H. P. electrically driven two-stage auxiliary air compressor.

A donkey boiler 48 inches diameter by 108 inches total height is installed to generate steam for heating purposes and for fire extinguisher service.

The Rich fire detecting and extinguishing system is also fitted, in conjunction with steam and $CO_2$, the latter being carried in flasks located on deck.

No effort has been spared in these ships in obtaining only the best in workmanship and material, and in the selection of auxiliaries, so that, when they go into service, it is expected that they will rank with the best freighters in the world in economy and reliability.

**Principal Dimensions of Motorship Californian and of Old Steamer Californian**

| | Steamer | Motorship |
|---|---|---|
| Length over-all | 429′ 6″ | 461′ 0″ |
| Length between perpendiculars | 413′ 0″ | 445′ 0″ |
| Beam, molded | 51′ 0″ | 59′ 8″ |
| Depth, molded to shelter deck | 33′ 6″ | 39′ 0″ |
| Contract draught | 26′ 0″ | 28′ 6″ |
| Disp. at contract draught, tons | 11,970 | 16,500 |
| D. D. at contract draught, tons | 9,500 | 11,000 |
| Cargo capacity including deep tank bal., cubic feet | .......... | 650,000 |
| Contract speed, knots | 10 | 11.5 |
| Normal fuel capacity (coal), tons | 1,182 | 1,400 |
| Reserve fuel cap'y in deep tank | .......... | 760 |
| Normal radius, miles | 6,000 | 25,000 |

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## HUMBOLDT EVENING TECHNICAL ALUMNI

AN alumni association has been organized by the former students of the Humboldt Evening Technical School with a membership at the last meeting of between 100 and 200. Many prominent engineers, architects and other professional men of San Francisco and surrounding localities received their early training at this school.

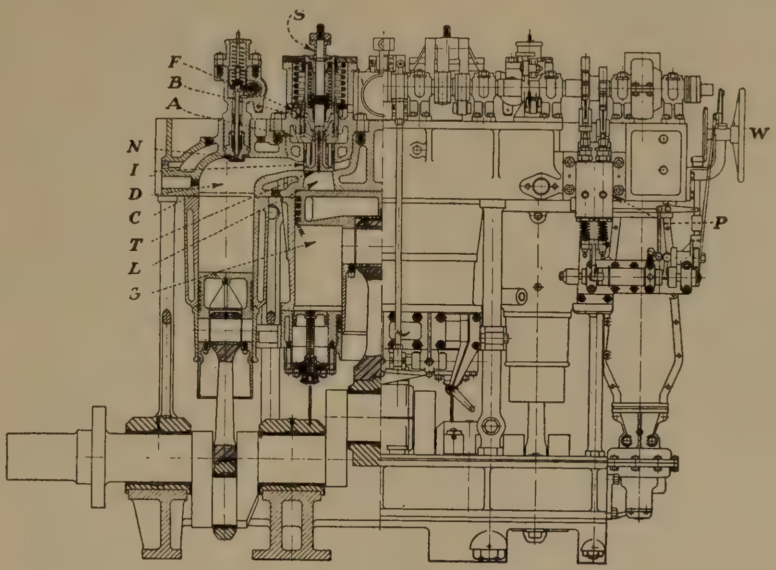
The object of the association is to bring together men of the different professions in social as well as educational intercourse and also to promote interest in evening school technical training and to assist students who are unable to obtain instruction in these lines during the day.

The last meeting was a very enjoyable entertainment and smoker. The program for the next meeting, which will take place in the early part of February, will include a talk by a man of prominence in his profession.

The board of directors earnestly request all men who attended the Humboldt Evening Technical School since 1897 to communicate with Mr. Frederick Birdsall, Bethlehem Shipbuilding Corporation, or Mr. C. V. Lane, 722 Merchants' Exchange Building, so that their names may be added to the membership roll.

# COMPOUNDING THE COMBUSTION ENGINE

**Ever since the first application of Diesel engines to marine propulsion, marine engineers have been working to reduce the weight and space which had to be devoted to these motors. Mr. Elmer A. Sperry, distinguished inventor and engineer of New York, here contributes a successful design for compounding the Diesel and achieves thereby practically the same results, so far as weight and bulk are concerned, that were obtained by the compounding of the steam engine.**



Sectional elevation showing working parts of the Sperry compound Diesel engine

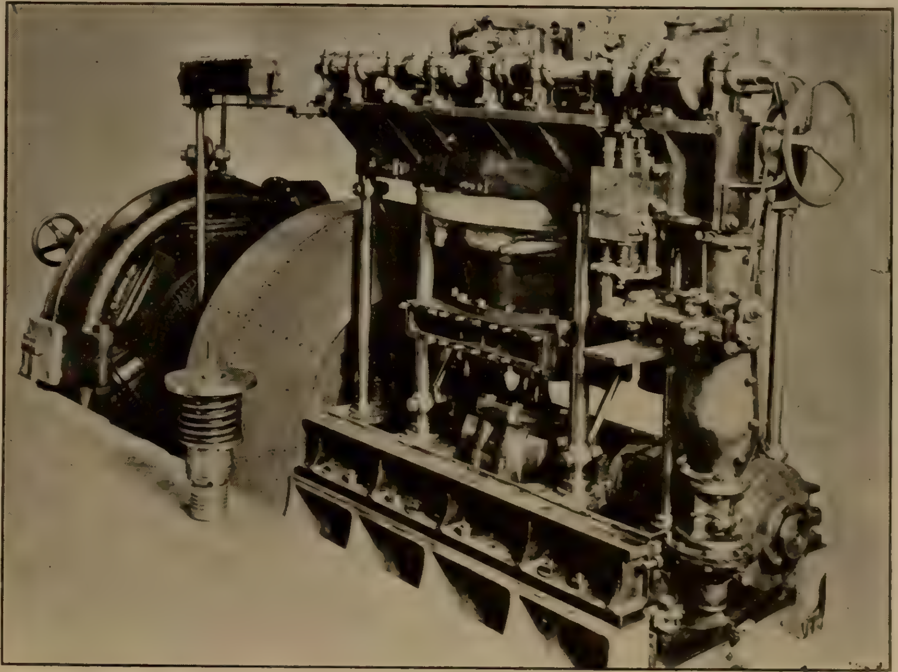
UNDER the above title Mr. Elmer A. Sperry of New York presented at the annual meeting of the American Society of Mechanical Engineers on December 6, 1921, a paper describing an engine which embodies some very far-reaching and revolutionary changes in the design and construction of Diesel engines, by which he proposes to reduce the weight and space occupied by an engine of given power to such an extent as to make the new type of engine, if found suitable in large powers, especially adaptable to marine propulsion.

Mr. Sperry in his paper sketches briefly the history of Diesel engine practice, particularly in regard to ship propulsion, and calls attention to some of the more prominent objectionable features, such as the large weight per horsepower, large space occupied, and high initial cost. He shows how from the very first attempts had been made in Europe to design Diesel engines on the multiple-stage expansion type and how in practically every case these attempts had resulted in failure.

### Development

In America a group headed by Mr. Sperry has been engaged on this problem for many years, patent records giving evidence of this early work as far back as December 10, 1892. The result of this long experimental work is the present Sperry compound Diesel engine, a section and elevation of which is shown at the top of this page.

The engine as developed is composed of two high pressure cylinders; a low pressure cylinder between them, the underside of which forms with its trunk and guide an air pump; suitable mechanism for driving a camshaft from the main crankshaft, this camshaft having 7 cams which operate 2 fuel valves, one exhaust valve, and 2 transfer and air inlet valves. This combination, together with a double fuel pump for solid injection of oil and suitable control mechanism, completes the engine.



View of Sperry compound Diesel engine direct-connected to generator

In this engine supercharging of the high pressure cylinders is utilized to increase the expansion ratio and also the mean effective pressure. It will be noted that the combustion chamber "D," as shown in the drawing at the right, has a very large volume when compared with the ordinary Diesel practice. This is shown graphically in the drawing itself, the difference between the solid line denoting the joint cylinder and cylinder head and the dotted line "C" representing the usual clearance in Diesel engines. This large volume for combustion chamber is one of the fundamental points in the design of the engine, and it will be noted that its dome-shape allows an extension of the combustion chamber out and over the low pressure cylinder without any destruction in the castings, thus providing a short efficient transfer port between the cylinders.

In supercharging, the induction or air inlet valve is opened on the air intake stroke of the high pressure piston, which works on the four-cycle principle, air from the annular chamber "A", which is in connection with the receiver air pump and contains air up to about 113 pounds, completely filling the cylinder and combustion chamber at that pressure. On the up stroke this large volume of air is compressed to Diesel values. Fuel is then supplied through the atomizing nozzle under such conditions as to insure in the large volume of compressed gas practically complete and instantaneous combustion, forcing the high pressure piston down on the working stroke.

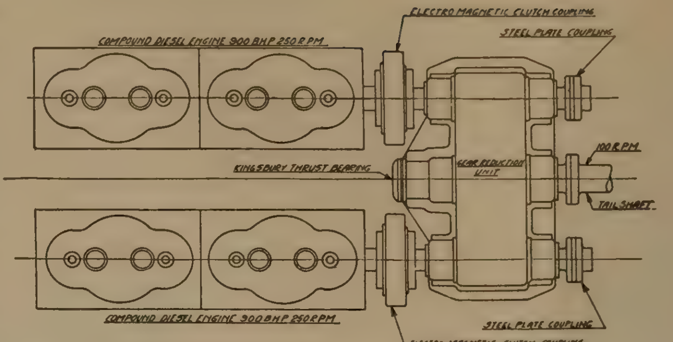
On the clearance stroke, which follows, the transfer valve "T" is opened, and the products of combustion, still at comparatively high pressure on account of the large volume of the combustion chamber in comparison with the total volume of cylinder, are admitted into the clearance space above the low pressure piston. This low pressure piston works on the two-cycle principle, receiving into its cylinder at every stroke the products of combustion from either one of the high pressure cylinders.

It will be noted that the clearance on the top of the low pressure piston is ordinary Diesel practice, or even less, and that no combustion takes place in the low pressure cylinder. This latter fact gives opportunity for an ingenious use of cushioning at the upper end of the low pressure piston stroke so that, the exhaust valve having been closed a trifle early on the clearance stroke, a small amount of the gas is compressed to about the same pressure as the exhaust from the high pressure cylinder. The transfer valve then being opened is free from any wire-drawing effects, the passage of gas from one cylinder to the other being dependent at the first cracking of the valve on the then very slow movement of the two pistons. Even at 1000 feet per minute piston speed the velocity of the gas passing through the transfer port does not exceed 200 feet per second. At this speed there is no danger at all of wire drawing. For cooling the valve seat at this point ample water-jacketing is provided, but for the cooling of the valve itself the intensive effect of the cooling properties of the inrushing supercharge air across the ribbed surfaces at the back of the valve has been found to be ample.

Various ratios of compounding have been used, ranging from 6 to 1 up to 10 to 1. These compound engines work at a piston speed of about 700 feet per minute in comparison with standard marine practice of about 900 feet per minute. In the small sizes, ranging around 75 to 100 horsepower, this speed would work out at about 400 revolutions per minute. Standard crosshead type marine Diesel engines of the four-cycle type range in weight from 300 to 450 pounds per B. H. P. The compound engine here illustrated weighs about 30 pounds per B. H. P.

It will be seen at a glance that there is nothing extraordinarily complex about the construction of this engine; in fact, in many details it is less complex than the standard Diesel.

It is obvious that such a prime mover, equaling, if not exceeding, the ordinary Diesel in economy of fuel consumption, would have a very wide range of adaptability. The readers of Pacific Marine Review will be principally interested in its adaptation for marine propulsion. In this connection Mr. Sperry advises installations as per the attached diagram—twin compound Diesels driving single propeller shaft through single reduction gearing and connected to their respective pinions through electro-magnetic clutch couplings.


ELECTRO MAGNETIC CLUTCH COUPLING
STEEL PLATE COUPLING
COMPOUND DIESEL ENGINE 900 BHP 250 RPM
100 RPM
KINGSBURY THRUST BEARING
GEAR REDUCTION UNIT
TAIL SHAFT
COMPOUND DIESEL ENGINE 900 BHP 250 RPM
STEEL PLATE COUPLING
ELECTRO MAGNETIC CLUTCH COUPLING

Proposed 1800 B. H. P. Sperry compound Diesel with electro-magnetic clutch couplings and single reduction gear

For this purpose Mr. Sperry has developed a very novel electro-magnetic clutch, which affords a very elastic method of driving. This clutch is in effect and principle practically an induction motor and consequently drives with an air gap or multiple air gaps between the driving and the driven elements.

The conclusion of Mr. Sperry's paper we quote here in full:

"In combustion engines the high-pressure principle is scientifically correct, having brought to the prime mover its choicest heritage, as stated, viz., the highest thermodynamic efficiency known. Broadly speaking, however, these various engines represent only the early stages of the development. The best of present embodiments in simple Diesels, though much refined as to certain details, are, generally speaking, extremely crude, their design is based on such a ridiculously small quantity of air per charge, and their material efficiency is too low to be tolerated. Further, very large structures are required to produce small powers.

"This paper presents the results of research extending over a series of years, looking to the correction of these and other serious faults and to very greatly increasing the material efficiency. This is found to bring with it a number of distinct advantages and, it is believed, marks a definite advance. It is high time that this next logical step be taken so that the full capabilities of the high-pressure principle in combustion engines may be realized in service by the adoption of modern multi-stage methods. Professor Watkinson is correct when he says: 'Only by compounding, as in the case of steam, are we to make the next great advance.' The author's contribution toward this most desirable end has been set forth in the preceding paragraphs, and some of the more important results reached have been outlined. It has been the aim to state both in simple terms, free from too much technicality. The thermodynamic calculations, heat analyses and other technical features of the work are, however, vitally interesting and may be collected and presented at some future time.

"Any contribution toward increasing the availability of combustion engines will not fail of appreciation by the engineering and prime-mover interests generally, including the marine. The high-pressure type presents the true line of attack, and contributions in this line will aid in lifting embodiments of this most useful principle to the high place it richly deserves. It is believed that the results for the first time announced in this paper warrant the prediction that engines employing the multi-stage or compound principle will occupy a dignified place in the combustion-engine art. If this principle should assume leadership, it will of course only be because of its demonstrated practical usefulness and general merit. At the present these appear to be of such magnitude as to at least insure wide adoption."

# SOME NOTES ON MOTORSHIP OPERATION

## And the Conversion of Steamers to Motorships

By A. J. DICKIE

On November 16, 1921, there was inaugurated out of Liverpool the first regular motor passenger liner service. This service is under the supervision of the Elder Dempster Line running from Liverpool to South Africa, a round voyage of approximately 12,000 miles. The initial liner is the Aba, 450 feet long, 55 feet 6 inches beam, 33 feet molded depth; of 8000 tons gross register; fitted up for first-class passenger accommodation to take care of 225 and with second and third-class accommodations to take care of 140.

The vessel is powered with two 8-cylinder Harland and Wolff Diesels of the Burmeister and Wain type, 750 millimeter bore and 1160 millimeter stroke, with a combined indicated horsepower of 6400. The results of the sea trials of this vessel justify the prediction that she will use less than 750 tons of Diesel oil fuel for the round voyage.

Heretofore the great majority, if not all, of the steamers on this line have been coal-burners, and for a similar size steamer 3000 tons of coal would be consumed in the round trip. It is obviously impracticable to carry 3000 tons of coal for fuel purposes on an 8800-ton gross passenger liner, and it was consequently necessary for the steamers to coal at a South

ADDITIONAL COST OF OPERATING STEAMER
PACIFIC COAST TO ORIENT

| | | | |
|---|---|---|---|
| Voyage | | | |
| San Francisco to Orient—turn-around | | | 13,500 miles |
| At Sea | | 55 days | |
| In Port—San Francisco | 10 days | | |
| Yokohama | 6 " | | |
| Kobe | 4 " | | |
| Shanghai | 4 " | | |
| Hong Kong | 6 " | | |
| Manila | 5 " | 35 " | |
| Round Trip | | 90 days | |

| | MOTORSHIP | STEAMSHIP |
|---|---|---|
| Tons DWT | 8800 | 8800 |
| Speed knots | 10 | 10 |
| Shaft horse power | 2500 | 2500 |
| Bunker capacity, tons (2240lb) | 1920 | 1920 |
| Fuel —lbs. per SHP | .45 | 1.25 |
| " " knot | 112.5 | 313 |
| Tons (2240lb) 55 days at sea sailing 13,500 miles | 680 | 1880 |
| " " 35 days in port | 30 | 250 |
| " " Total for voyage | 710 | 2130 |
| " " Purchased in Orient | - | 200 |
| Cost per ton —Pacific Port | $13.40 | $13.40 |
| " " —Oriental Port | - | 40.00 |
| Total Fuel Cost-round trip | $9,550.00 | $33,850.00 |
| Excess cost Diesel Lubrication-round trip | 600.00 | |
| Labor —Cost of Additional Engine Room Crew per voyage | | |
| 3 water tenders @ $75.00 month | | $675.00 |
| 3 Firemen | | 675 00 |
| Board-6 men-90 days @ $1.25 | | 675.00 |
| Total excess cost labor on steamship | | $2,025.00 |

ADDITIONAL COST OF OPERATING STEAMSHIP

| | |
|---|---|
| Per voyage | $25,725.00 |
| Per annum-4 voyages | $102,900 00 |

**This layout for the substitution of a direct connected crosshead type marine Diesel for the boilers and steam engine on a standard Shipping Board freighter, without alteration of any kind in the hull structure, shows the possibility of economic conversion of many of the steamers of the Shipping Board which are now laid up.**

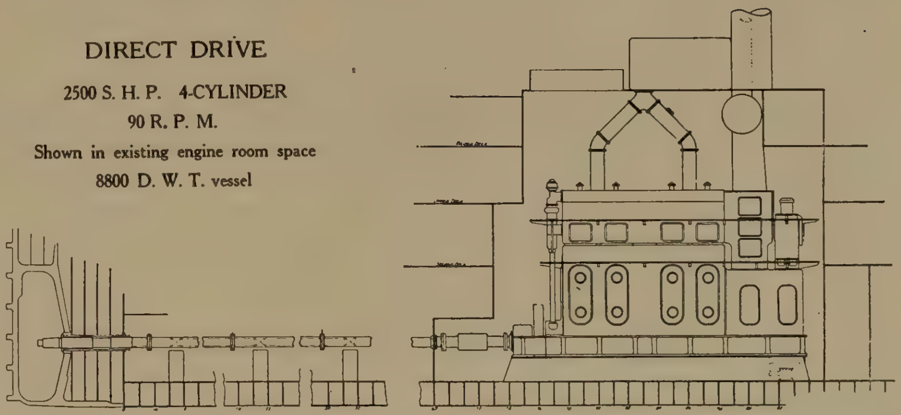
DIRECT DRIVE

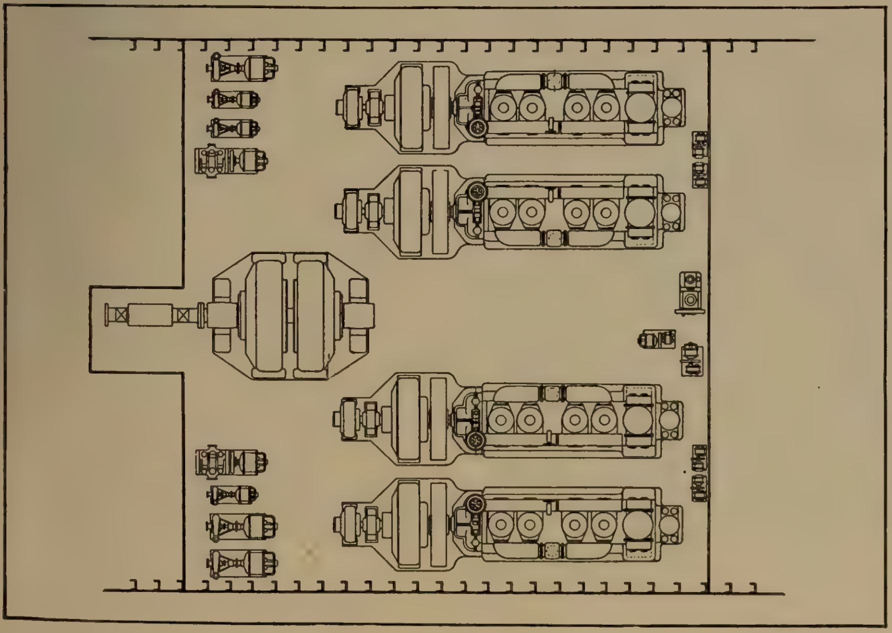
2500 S. H. P. 4-CYLINDER

90 R. P. M.

Shown in existing engine room space

8800 D. W. T. vessel





**This plan shows the installation of Diesel electric type of marine drive in the existing engine room space of a standard Shipping Board freighter, without alteration to the hull. In this connection there is a very definite rumor to the effect that the Shipping Board has a plan under way for selling a number of their medium and larger size freighters at a very low price, provided the purchaser will convert to some form of Diesel drive. Prices as low as five to ten dollars per deadweight ton have been mentioned in connection with this plan.**

African port and frequently at one intermediate port on each leg of the journey; so that the operators of the Aba are figuring that it will be possible with Diesel propulsion to work in at least one additional round trip every two years on the difference in time required on account of coal fuel operations as compared with taking on Diesel oil.

This feature in the use of oil fuel has been very prominently brought to the notice of American readers by the Shipping Board in connection with "Coal Oil Johnny" propaganda to show the value of the American oil-burning steamer as compared with the coal-burning vessel of many of our rivals. Everything that has been said in connection with oil-burning steamers in this regard applies with even greater force to the Diesel motorship.

In this connection there have been recently brought out some very interesting figures with regard to the performance of the trans-Atlantic liner Olympic as an oil-burner. With coal the Olympic's performance was .57 miles per ton burned. With oil this was increased to .85 miles per ton burned. The owners, therefore, conclude that, taking into consideration only the daily cost of fuel consumed, oil is cheaper than coal so long as the cost per unit of weight does not exceed the ratio of three for oil to two for coal.

Bunker coal has been coming down in price, and oil for bunker purposes is remaining about level and in some sections has increased. Considerable pessimism has been expressed recently with regard to the future of the Diesel engine on account of the high price of oil and the possible future famine in that commodity. However, the saving in the fuel bill is the least of the economies effected by the use of oil in the Diesel engines or under the steam boilers of our freight or passenger vessels. In the case of the Olympic, while using coal 229 men were kept busy in her boiler rooms; with oil burning under the boilers only 60 men were needed.

While burning coal this ship was held up at each end of her run for four and one-half days so that her bunkers might be filled with coal. Under her present system the fuel oil tanks are filled in six hours. This saving in time means at least one more round trip per season, making a tremendous difference in the earning power of the vessel, it being remembered that with a passenger liner in such service the entire operating cost, including the wages and board of the steward's department, is going on continuously whether the vessel is at port or at sea.

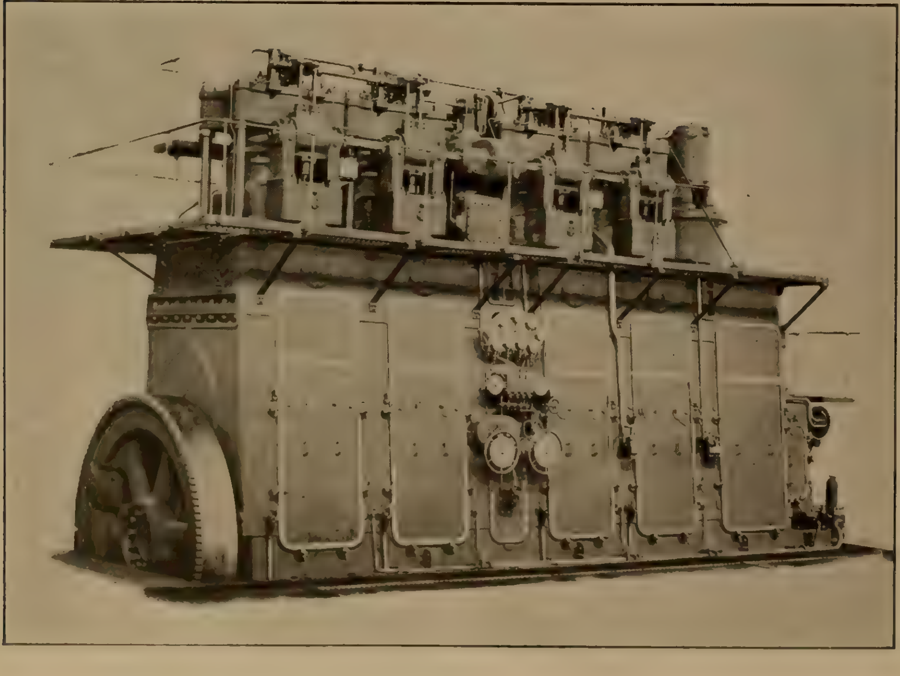
When it becomes practicable to adopt Diesel engines in a vessel of the Olympic's size and speed, her consumption of fuel oil will be cut by at least 50 per cent; the 60 men now used in her boiler rooms would be set free for some other work; the space occupied by the up-takes and funnels from her boiler rooms would be available for additional passenger accommodation; and much of the space occupied by her boilers could be used for express freight service. In fact, it would be possible to figure as large additional savings by the conversion of the Olympic to a motorship from an oil-burning steamer as have been realized by her conversion from coal to oil-burning under the boilers, and if we were to figure the elimination of stand-by losses, possibly the savings in the Diesel conversion would in actual operation show a much more favorable result.

A rather interesting record came in the other day from four Italian motorships. These ships were standard cargo carriers of 8100 deadweight capacity, 11,200 tons displacement, built by the Ansaldo-San Giorgio Works at Turino and operated by the Societa Nazionale di Navigazione. This company also operates a number of steamers. At the present time every steamer it owns is laid up at Genoa, and these four motorships are operating at a profit.

They are powered with twin 1500 horsepower, 2-cycle, Ansaldo marine Diesel engines. This plant, turning at 125 revolutions per minute, gave a sea trial speed of 12 knots an hour. Under service conditions loaded, these ships are using 9.4 tons of fuel oil per day, which works out to about .45 pounds per shaft horsepower per hour for all purposes.

The first of these ships to be put in service has now made a mileage at sea of 80,000; the second ship has made 70,000 miles; the third 37,000; and the fourth 10,000, a total mileage of just under 200,000 miles for the four ships, and the engines have not had to be stopped at sea for any reason except on orders from the bridge in maneuvering the ship.

We submit here a scheme for the conversion of a typ-



Marine Diesel of 1500 H.P. at 125 R. P. M. This engine is of the 2-cycle type as manufactured by Ansaldo - San Giorgio Works at Turino, Italy. Note the simplicity and the centralization of the control panel. This firm has built four motorships for the National Navigation Company of Turino, each of which is powered with twin engines identical to that shown in this illustration.

ical 8400 deadweight capacity Shipping Board steamer to a direct marine Diesel drive or Diesel electric drive. This scheme was gotten up by a well known American manufacturer of Diesel engines. It is not intended to advocate here in any way the use of this particular engine, but to show in a general way the possibilities for conversion of our standard freight steamers. Any American manufacturer of Diesel engines for marine propulsion could, if called upon, lay out a similar arrangement for his particular type of engine. The savings to be effected by such conversion are figured by the manufacturer for a San Francisco-Orient round voyage.

It will be noted by anyone who is familiar with such figures that the engine manufacturer is here making out a very conservative case for his engine. For instance, in comparing the cost of fuel, it will be seen that whereas the steamer had to buy a considerable amount of fuel at a high rate in the Asiatic port, the motorship might have sold in the Asiatic port sufficient of her fuel at the same high rate so that the profit on the sale would have nearly met the fuel bill. As a matter of actual operating practice, this sort of thing is now being done by the Scandinavian motorships operating on North Europe-Pacific Coast runs. These ships purchase fuel supplies at the point on their voyage where the fuel is cheapest and sell their surplus bunkers at the point where they can realize the highest price.

The figures quoted in the pamphlet from which the conversion job on the 8400-tonner above was taken would indicate that on a quantity basis conversion would cost in the neighborhood of $50 a deadweight ton. This figure might at the present time seem to be prohibitive when we consider that first-class steamers of the same type as these 8400-tonners are now being sold at prices as low as $30 to $35 per ton. The only answer to that argument is that the savings to be effected by Diesel operation would very quickly amortize the expense of conversion; and it is a fact that on the markets of the world today a first-class motorship in good condition is more readily salable at $100 per ton than a steamer of the same class at $35.

We have now under ownership of the United States Shipping Board some seventeen hundred steamers, the majority of which are oil-burning. We have a few first-class motorships in America, whose performances are proving beyond the peradventure of a doubt that American shipbuilders and marine engineers can build and equip motorships which are reliable under all service conditions. We have the records of eight years of very successful performance at sea of European motorships, and we see the object lesson before us continually of European motorships running at a profit where steamships under identical conditions, and in some cases under identical management, are being laid up for lack of profitable business; and we must therefore conclude, if we are at all reasonable, that it is up to the United States Shipping Board to change many of its unprofitable steamers to profitable motorships.

Remarkable photograph showing practically the entire Pacific slope of the Panama Canal. This view is taken from Cerro Luisa near Pedro Miguel Locks, the lower end of which is shown on right center. Miraflores Lake appears in the center, and the locks of the same name in the middle distance, with the sea level portion of the canal and the Pacific Ocean beyond. Part of the city of Panama appears at the left of Ancon Hill, the higher hill in the middle distance, and part of the village of Pedro Miguel in the left foreground.

# OCEAN TRANSPORTATION COSTS

### By JOHN L. BOGERT

THE American taxpayer was pitchforked into the shipping business by the war. Willy-nilly, he was called upon to expend some three and a half billions of dollars, because the allies told him ships would win the war. Now he has on hand some 1500 steel freighters of value and some few hundred wooden ships of practically no value at all as cargo carriers.

Just the same, regardless of how much his investment has shrunk and how much of it he must write off and charge to the profit and loss side of "winning the war," he knows that he can never again afford to let Great Britain or any other nation, no matter how friendly, take care of the foreign delivery of his goods. He has come to realize that, just as one large department store could never afford to consent to let the trucks and delivery wagons of a rival concern deliver its goods to its customers, no matter what the saving in cost, so the United States cannot afford to leave the handling of its foreign trade in any but American hands. It is asking too much of human nature to expect a foreign shipowner or ship's captain to take the same interest in the prompt and careful delivery of goods made in America as in his own country. Being a manufacturing nation, we must carry our own goods to our customers in our own ships if we expect to stay permanently in the export business.

Taking the foregoing for granted, we must devote all our energies and abilities to the solution of the problem of cheap ocean transportation.

What part of a cent will suffice to pay the entire cost of transporting a ton of goods one mile at sea?

There are several variable factors in the problem, and it is highly desirable to point out their relative value. It seems to the writer that much valuable light might be shed on this important subject by pointing out the experience of thoroughly up-to-date foreign concerns whose activities have covered the very field we are entering.

For this reason, I am offering, for the careful consideration of the readers of the Pacific Marine Review, a table which shows the actual and comparative cost of each of twelve different items that go to make up the total operating cost of a line of trans-oceanic cargo carriers—a line whose success in this business has been second to none. If I were to state the name of the company, I doubt whether any shipping man would question the high standing they enjoy as operators of cargo ships on long voyages extending over a considerable part of both the Atlantic and Pacific oceans.

I especially commend to careful consideration items 1, 2, 3 and 6. How many persons, not immediately connected with the bookkeeping and auditing departments of shipping concerns, would suppose that the cost of loading and discharging a vessel could be greater than the wages and provisions, or that the item "Suez Canal, Panama Canal and harbor dues" might exceed either? One thing appears evident: the cost of fuel under normal conditions (the years 1914 and 1915 were not normal) is almost twice as much as wages and provisions.

The Diesel-engined motorship consumes but 40 per cent of the fuel required by the most economical steamer, so the cost of wages on a motorship might be very much higher than on a steamer and still there would be a most substantial economic gain in favor of the motorship.

What makes this table of peculiar interest is the fact that on December 31, 1911, this company had only steamers in service and no motorships, while on December 31, 1915, it owned only motorships, having disposed of all its steamers. Bearing that fact in mind, it is well to study item 7—"Classification, Repairs, Stores and Maintenance." The change from all steamers to motorships did not increase the repair bill percentage.

All ships built for this company are designed for liner service and therefore more costly than plain cargo carriers.

The average cost of all vessels built for this company up to the close of the year 1911 was £10, 13s., 10d. per deadweight ton. Depreciation was figured at 5 per cent on first cost, the basis being amortization in twenty years.

In 1912, in view of the fact that the advent of the motorship pointed to the possible passing of the steamship, it was decided to advance the depreciation rate from 5 to 6-2/3 per cent, the basis being amortization in fifteen years instead of twenty.

Notwithstanding the fact that three-fourths of the tonnage of the new ships under construction for this company this year were motorships, the new vessels on order cost but £10, 18s., or about 4s. more than previously, when only steamers were contracted for. In 1913, as in the previous year, depreciation was figured at 6-2/3 per cent—amortization in fifteen years.

In 1914, having disposed of many

(Continued on page 57)

| ITEMS | OPERATING EXPENSES | YEAR ENDING DEC. 31, 1911 | YEAR ENDING DEC. 31, 1912 | YEAR ENDING DEC. 31, 1913 | YEAR ENDING DEC. 31, 1914 | YEAR ENDING DEC. 31, 1915 | A. D. O. K. John L. Bogert |
|---|---|---|---|---|---|---|---|
| 1 | COAL & OIL | $451.970. | $540.321 | $633.677 | $607.105. | $701.810. | AMOUNT-DOLLARS |
| | | 21.343% | 22.337% | 20.716% | 18.917% | 16.586% | PERCENTAGE |
| 2 | WAGES & PROVISIONS | $235.879. | $300.946. | $306.175. | $367.346. | $550.613. | AMOUNT-DOLLARS |
| | | 11.139% | 12.441% | 10.009% | 11.447% | 13.013% | PERCENTAGE |
| 3 | SUEZ CANAL, PANAMA-CANAL & HARBOUR DUES | $353.886. | $341.195. | $355.018. | $433.628. | $491.430. | AMOUNT-DOLLARS |
| | | 16.712% | 14.105% | 11.606% | 13.512% | 11.614% | PERCENTAGE |
| 4 | CONSULAR FEES | $4.010 | $4.495. | $3.711 | $9.854 | $7.432. | AMOUNT-DOLLARS |
| | | 0.189% | 0.186% | 0.121% | 0.307% | 0.176%. | PERCENTAGE |
| 5 | PILOTAGE & TOWING | $50.668. | $59.251. | $67.075. | $72.124 | $71.342. | AMOUNT-DOLLARS |
| | | 2.393% | 2.494% | 2.193% | 2.247% | 1.686% | PERCENTAGE |
| 6 | LOADING & DISCHARGING | $256.870 | $300.382 | $401.238 | $384.147 | $436.138. | AMOUNT-DOLLARS |
| | | 12.130% | 12.418% | 13.117% | 11.970% | 10.307% | PERCENTAGE |
| 7 | CLASSIFICATION, REPAIRS, STORES & MAINTENANCE. | $132.422. | $131.414. | $120.792 | $219.933 | $253.034 | AMOUNT-DOLLARS |
| | | 6.253% | 5.433% | 3.949% | 6.853% | 5.980% | PERCENTAGE |
| 8 | STEAMERS ON CHARTER | $191.084. | $222.907. | $520.629 | $368.421. | $226.423 | AMOUNT-DOLLARS |
| | | 9.024% | 9.215% | 17.020% | 11.480% | 5.351% | PERCENTAGE |
| 9 | AGENTS' COMMISSIONS. | $112.428 | $142.857. | $188.643. | $166.048. | $288.479 | AMOUNT-DOLLARS |
| | | 5.309% | 5.906% | 6.167% | 5.174% | 6.818% | PERCENTAGE |
| 10 | INSURANCE. | $102.413. | $141.465. | $174.211 | $269.904 | $781.411. | AMOUNT-DOLLARS |
| | | 4.836% | 5.848% | 5.695% | 8.410% | 18.467% | PERCENTAGE |
| 11 | TRANSHIPMENT, CONFERENCE REBATES & CLAIMS. | $198.871 | $203.905 | $255.713 | $274.957 | $361.389 | AMOUNT-DOLLARS |
| | | 9.391% | 8.429% | 8.360% | 8.568% | 8.541% | PERCENTAGE |
| 12 | TELEGRAMS, ADVERTISEMENTS & SUNDRIES. | $27.087 | $29.799. | $32.018. | $35.765 | $61.810 | AMOUNT-DOLLARS |
| | | 1.279% | 1.232% | 1.046% | 1.114% | 1.461% | PERCENTAGE |
| | TOTALS | $2.117.588. | $2.418.937 | $3.058.900 | $3.209.232 | $4.231.311. | AMOUNT-DOLLARS |
| | | 99.998% | 100.044% | 99.999% | 99.999% | 100.000% | PERCENTAGE |
| | FREIGHT & PASSAGE MONEY. | $2.632.376 | $2.994.943 | $3.789.756 | $4.060.797 | $8.067.714. | AMOUNT-DOLLARS |

# AUXILIARIES AND WORK BOATS

## AUXILIARY SCHOONERS

By H. C. SNETHLAGE

STEAMSHIPS have gradually replaced the old sailing vessels on practically every ocean route, but there is still a field left for the old schooners along the coast and in the high sea trade, on routes where they can be reasonably sure to find favorable winds. However, even in these cases sailing vessels will have to overcome their chief handicap, of being entirely dependent on the wind at sea and on the tugboat captain in port. This handicap has been removed with increasing success by fitting them with auxiliary power. If the right type and correct size of auxiliary engine is fitted, a sailing ship undoubtedly can compete successfully against full powered ships on certain routes on account of their low first cost and low operating expenses.

First of all, it must be mentioned that the engine should be auxiliary power and not the main propelling power of the ship. In other words, the auxiliary engine should be of sufficient size to give the ship a speed of from five to seven knots an hour, the lower speed being for smaller ships. To fit a sailing ship with a power installation that will drive her at from nine to eleven knots, thereby making her a full powered motorship, is obviously a mistake. The cost of her engines, size of engine room and bunkers would then be practically the same as for a full powered motorship or steamer without sails. During the time this full-sized engine is used, the enormous head resistance of mast and rigging would put her at a disadvantage compared with the ordinary steamship, and during the time she proceeds under her sails, the loss in deadweight and the additional capital depreciation and larger crew for the full powered engine would act as a continuous drag on the operating expenses of the ship.

### When to Use Power

The auxiliary power should be used on the following occasions:

1. When arriving at or leaving a port.
2. In canals (such as the Panama Canal, for instance) and in narrow rivers and inlets.
3. When there is very little or no wind.
4. For very short trips along the coast, when it is not worth while to hoist all the sails.
5. If it is necessary to point a little higher.
6. In case it is important for the ship to be in port at a certain time in order to take advantage of a favorable tide, etc.
7. In case of accident and in general in all cases where towing expense can be eliminated.

As shown, an auxiliary engine gives a sailing vessel many advantages and these advantages will easily pay for the additional expense of the motor, provided pure auxiliary power is used of a type that can be handled by one of the crew, who will probably get some $10 to $20 extra per month.

### Additional Cost

The annual extra cost can be figured at: 5 per cent as a return on capital invested; 7 per cent of first cost for depreciation; about 10 per cent of the cost for insurance; a loss in deadweight carrying capacity

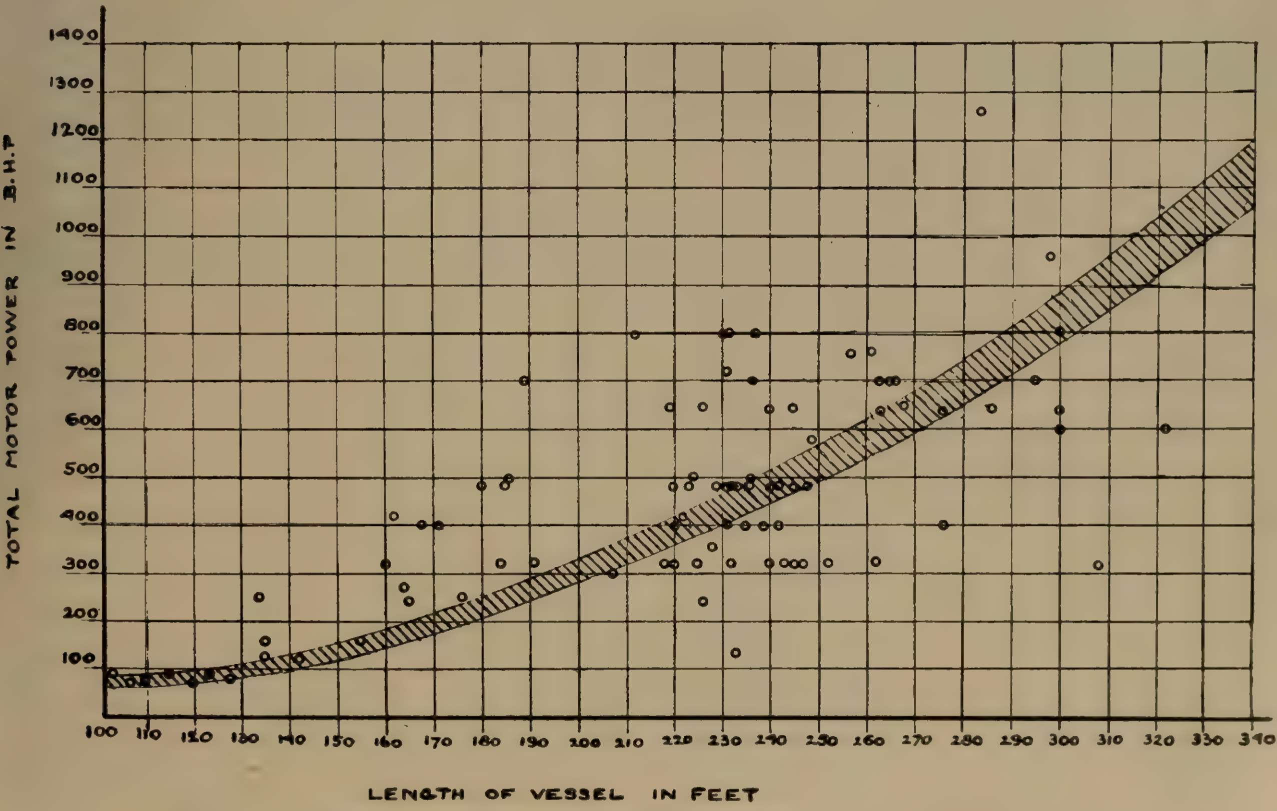


Figure 1—Curve showing average power in relation to length of vessel for auxiliary motor schooners

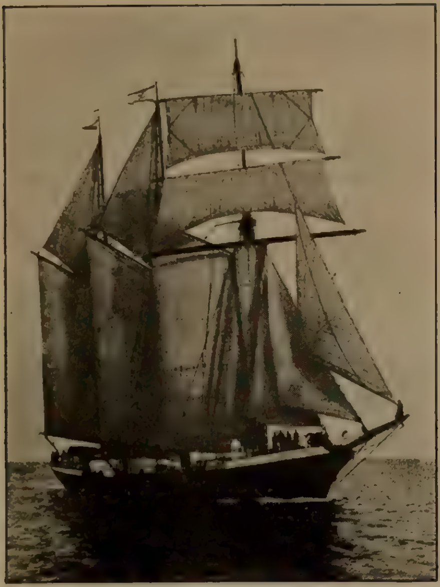


Figure 2—German auxiliary schooner for ocean service

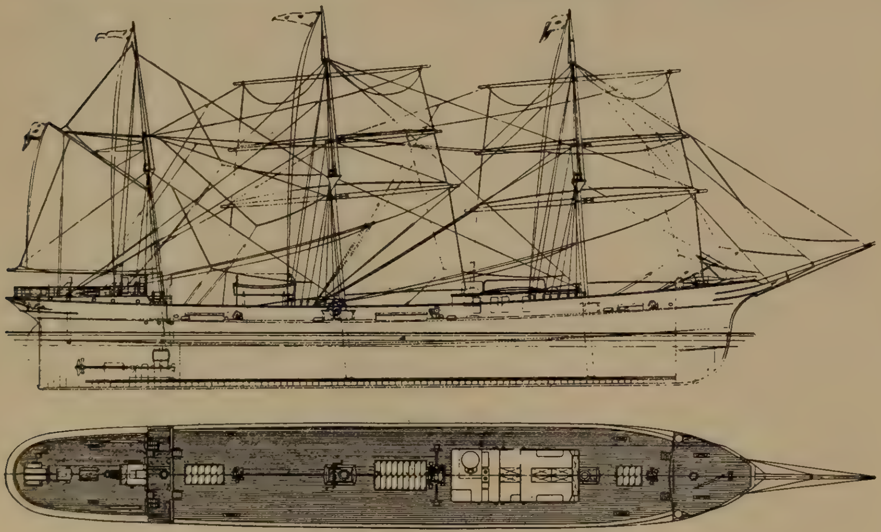


FIG. 229.—*Caracas.*

Figure 3—The Caracas, a Norwegian auxiliary barkentine

due to the weight of the motor (this might be offset by an increase in draft, which the vessel can obtain if a certain speed is guaranteed with motor only); $120 to $240 extra per year for one of the crew; cost of fuel and lubricating oil, depending on the number of hours the engine is used; about 3 per cent of the first cost for repairs. The additional resistance of the propeller, when the engine is not in use and therefore declutched, is negligible.

### Power Necessary

In order to give an approximate idea of the auxiliary power necessary for a sailing ship, the accompanying diagram (Figure 1) has been prepared. It has been taken from actual data of existing ships. The diagram gives the total horsepower plotted on length of ships. The shaded area represents a favorable compromise, and it gives approximately five to seven miles for a vessel of ordinary dimensions, block coefficient, and shape. It is quite evident that if a ship is rather short for her deadweight—in other words, if she has a rather high block coefficient for her size and type—the horsepower will have to be taken a little higher, and vice versa.

The diagram shows clearly that there is a large variation in the power used, partly due to the fact that some vessels are practically full-powered motorships, and, on the other hand, it shows that quite a number of vessels have been underpowered, which is as bad, if not worse, than putting in too much power. A good deal of the criticism against auxiliary schooners is due to the fact that they were underpowered, and as any strong tide would make the engines practically useless, the latter were working with a constant overload, and they consequently deteriorated very quickly.

Having determined the necessary horsepower, it remains to decide on the type of engine to be used. The steam engine can be eliminated at the start, because of its extra weight, the large space taken up by engine, boiler and bunker, the higher fuel consumption, the larger crew, and the impossibility of starting the steam engine at short notice, unless fire is kept continuously in the boiler, which would destroy all commercial advantage of auxiliary power.

The gasoline or kerosene motor is easy to handle and its first cost is low, but it cannot compete with Diesel or semi-Diesel engines for commercial use on account of its higher operating expense. It also has too high a number of revolutions for this type of vessel with its low speed. It is therefore a matter of using either the Diesel or semi-Diesel (hot bulb or surface ignition) and in most cases the semi-Diesel will be best suited for auxiliary schooners. The Diesel engine has a lower fuel consumption, from .38 to .42 pounds per B. H. P. hour, against .50 to .55 for the semi-Diesel, and on full-powered vessels where the engines are constantly running this would probably be a decisive factor. Since, however, the auxiliary motor is used only occasionally, the slightly better economy of the Diesel engine is of minor importance. The disadvantages of the Diesel engine for this purpose are a higher weight, more space required, more complicated machinery, requiring a high-class engineer, and a higher first cost. The simplicity of design and operation is in this case one of the prin-

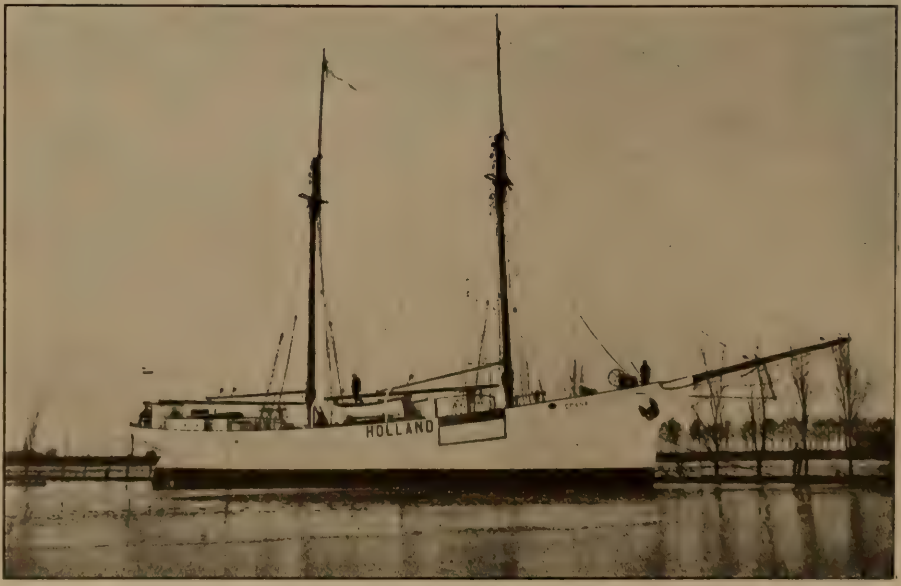


Figure 4—Dutch auxiliary cruiser built by D. Goedkoop of Amsterdam

cipal reasons in favor of the semi-Diesel engine.

### German Auxiliary

Figure 2 shows an auxiliary schooner of 625 tons deadweight, five of which have been built by the Germaniawerf, Kiel, Germany.

The main dimensions are 148 by 29.5 by 13.5 feet and 9.5-foot draft.

These schooners are designed for ocean service, and they are intended to run between South America and Germany. Since they are intended to proceed up the river Rhine under their own power, the auxiliary machinery has been designed to give them a speed of seven knots, although a speed of six knots would have been a sufficient speed for a vessel of this size when using the auxiliary power.

A hot bulb engine would have been the proper motor for these vessels, but since no satisfactory motor of this type has been developed in Germany, a M. A. N. Diesel engine was selected. This engine yields 160 B. H. P. at 240 revolutions a minute.

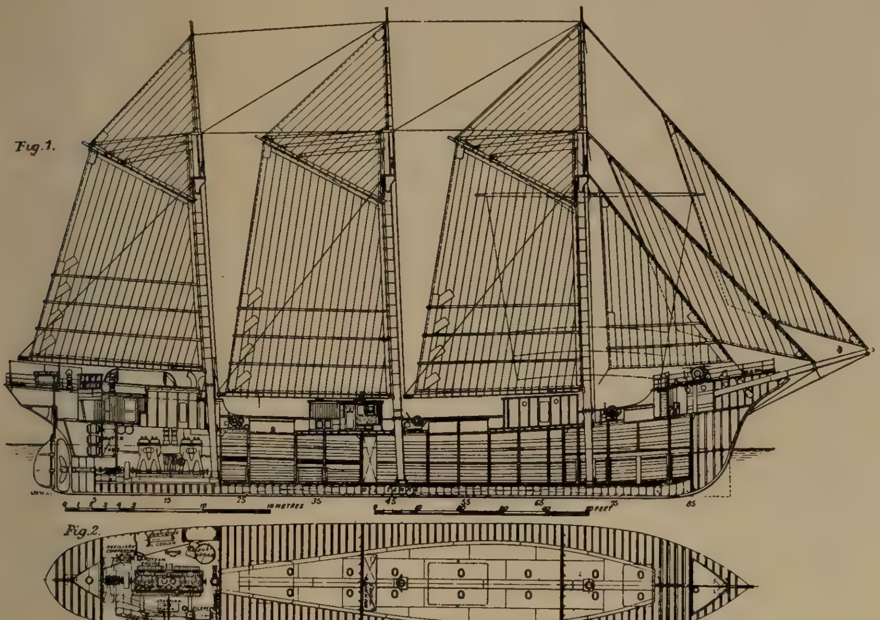


Figure 5—Italian auxiliary schooner Aosta

The rudder is handled by a hand-wheel, which may be considered satisfactory for a ship of this size. The windlass is handled by a small motor placed on the forecastle, and the winches are handled by two gasoline motors placed fore and aft of the main mast. Driving the windlass and winches by electricity was at first considered. This scheme, however, was abandoned because the first cost would be too high and because an electric installation would require extra crew for handling it. A good solution for deck machinery would be small hot bulb motors that could use the same fuel oil as the main motors.

### Norwegian Auxiliary

Figure 3 shows the Caracas, built in Arendal, Norway, for the Oerum Corporation in Christiania.

She is 218 feet by 33 feet 6 inches by 18.3 feet and has a deadweight carrying capacity of 1500 tons. The auxiliary machinery consists of two 2-cycle Bolinder hot bulb motors of 160 B. H. P. each, making 250 revolutions a minute.

Her consumption for two engines averaged in 1915: fuel oil, 110 pounds; cylinder oil, 1.28 pounds; and bearing oil, 2.8 pounds per hour, while both engines were at work.

On a voyage home from Miramichi two other ships left at the same time as the Caracas, but they had not arrived in the Bristol Channel fourteen days after the arrival there of the Caracas.

### Dutch Trader

Figure 4 shows a Dutch auxiliary schooner built by D. Goedkoop, Amsterdam. She is provided with a 90 horsepower Kromhout motor. Her dimensions are 103 feet 4 inches by 22 feet 11 inches by 10 feet 6 inches, and she makes six knots an hour using the auxiliary motor. This vessel represents a type that is widely used along the Dutch and French coasts and in the Baltic sea. On account of the low first cost and the simplicity in design, this type of vessel can compete very successfully against steamers in coastwise service.

### Italian Schooner

Figure 5 shows the Italian schooner Aosta fitted with a 440 B. H. P. Savoia engine, a full Diesel motor, which develops its maximum power at 200 revolutions a minute, but can be slowed down to 50 revolutions a minute without any trouble. The engine is of the 2-cycle type and the total weight of the machinery installation is 42 tons.

The Aosta has the following dimensions: length 184 feet, beam 28.2 feet, depth 14.3 feet, displacement 1050 tons and deadweight 700 tons. She is therefore practically a full-powered ship as an ordinary coaster of 1050 tons displacement would not have much more than 440 B. H. P. (about 600 I. H. P.). This can be readily seen from the arrangement plan, as the engine room takes up much more space than should be necessary for purely auxiliary power. As she has some accommodation for passengers, this may be the explanation of her rather high power.

Besides her main engine, she has a donkey boiler with steam engine of about 25 horsepower, which drives the auxiliary compressor and the winches.

A four-masted schooner, 236 feet long, was recently designed and built under the supervision of Cox & Stevens, New York, for American owners. She is fitted with a 700 B. H. P. Winton Diesel engine, which has given complete satisfaction. She uses steam for her winches and pump, for which a donkey boiler is installed on the forward part of the main deck.

It might be added that when it comes to these larger powers (over 400 horsepower per engine), it will be found advantageous to use a full Diesel and in this case the design that is easiest to handle should be selected, as it probably will be handled pretty roughly on a boat of this kind. The general tendency is to have all winches and other deck machinery handled by small motors or by electricity, as great improvements have been made by manufacturers of this equipment in recent years, especially in the way of making their apparatus reliable and foolproof.

The future and possibilities of the auxiliary sailing vessel are probably better now than they ever were before. Engines have increased in price and so have sails and masts. But whereas fuel has also gone up, the principal power for the schooner is about the only thing that has remained entirely free of charge and will be so in the future.

It is for that reason that it will be worth while for coastal transportation and other special routes to look into the matter of auxiliary sailers and to make a thorough comparison with full-powered ships.

# CHANGES IN WORK BOAT DESIGN

By DAVID W. DICKIE

THE small motorboats on the Pacific Coast have become the standard of design throughout the United States where heavy-duty sea-going qualities are desired. The advent upon the market of the small Diesels has required a change to be made in the design of the boat on account of the weights to be taken care of. By way of illustration, the weights in pounds of similar installations of 100 horsepower gas engines and 100 horsepower Diesels are given:

| | Gas Engine | Diesel Engine |
|---|---|---|
| Engine | 14,865 | 21,950 |
| Propeller shaft 11.5′ | 4″–595 | 5″–923 |
| Propeller | 350 | 350 |
| Stern-bearing | 4″– 94 | 5″–147 |
| Stuffing box | 4″– 73 | 5″–114 |
| Lead sleeve | 268 | 268 |
| Fuel piping | 36 | 36 |
| Filter for fuel | ........ | 80 |
| Water pipe and sea-cocks | 480 | 480 |
| Batteries | 250 | ........ |
| Air tanks or bottles | 300 | 1,741 |
| Tools | 10 | 10 |
| Bolts and lag screws | 110 | 110 |
| Lubricating oil tank and piping | 86 | ........ |
| Force feed | ........ | 219 |
| Lubricating oil | 360 | 789 |
| Exhaust piping | 560 | 697 |
| Auxiliary engine to pick up lost air | ........ | 830 |
| Fuel tanks | 2,838 | 2,838 |
| Fuel | 6,500 | 6,500 |
| Total, pounds | 27,775 | 38,082 |
| | | 27,775 |
| Difference, pounds | | 10,307 |

This means that the boat has to float 10,307 pounds more weight than if a gas engine is installed, some of which weight can be saved by carrying less fuel, as the Diesel engine delivers 16 horsepower per gallon of the cheap fuel against about 8 horsepower per gallon of the expensive fuel — under service conditions, of course. On test the Diesel will give about 18.7 horsepower per gallon and the gas engine 10.6 horsepower.

Practically every gas engine company around San Francisco Bay has been experimenting with the system of solid injection used by Doxford, Cammell-Laird, Vickers, etc., the English manufacturers. With the solid injection the spray of oil from the nozzle is so finely atomized that it will light with a match in the open atmosphere.

The writer found that the complete line of engines of one gas engine company had been designed to be converted to Diesels. The engines were designed with a certain size of crankshaft, having in mind that the same crankshaft would take a smaller size cylinder of the Diesel engine. All of the remainder of the engine is the same, the camshaft to be altered to drive the pump set.

Considerable difference of opinion exists regarding the oil pressure to be used for injection from that of 8000 pounds of the Doxford engine to the 3500 to 4000 pounds of some of the other designs, but all have the same method of atomizing, varying only in details.

Several limiting features govern the design of the boat where the bent frame construction is used. The accompanying set of lines are of the new boat being built by the Pacific Boat Company of Oakland for the Board of State Harbor Commissioners, which boat is engined with an Enterprise Diesel engine of 100 H. P.

First: Bending oak is difficult to obtain longer than 16 feet and the

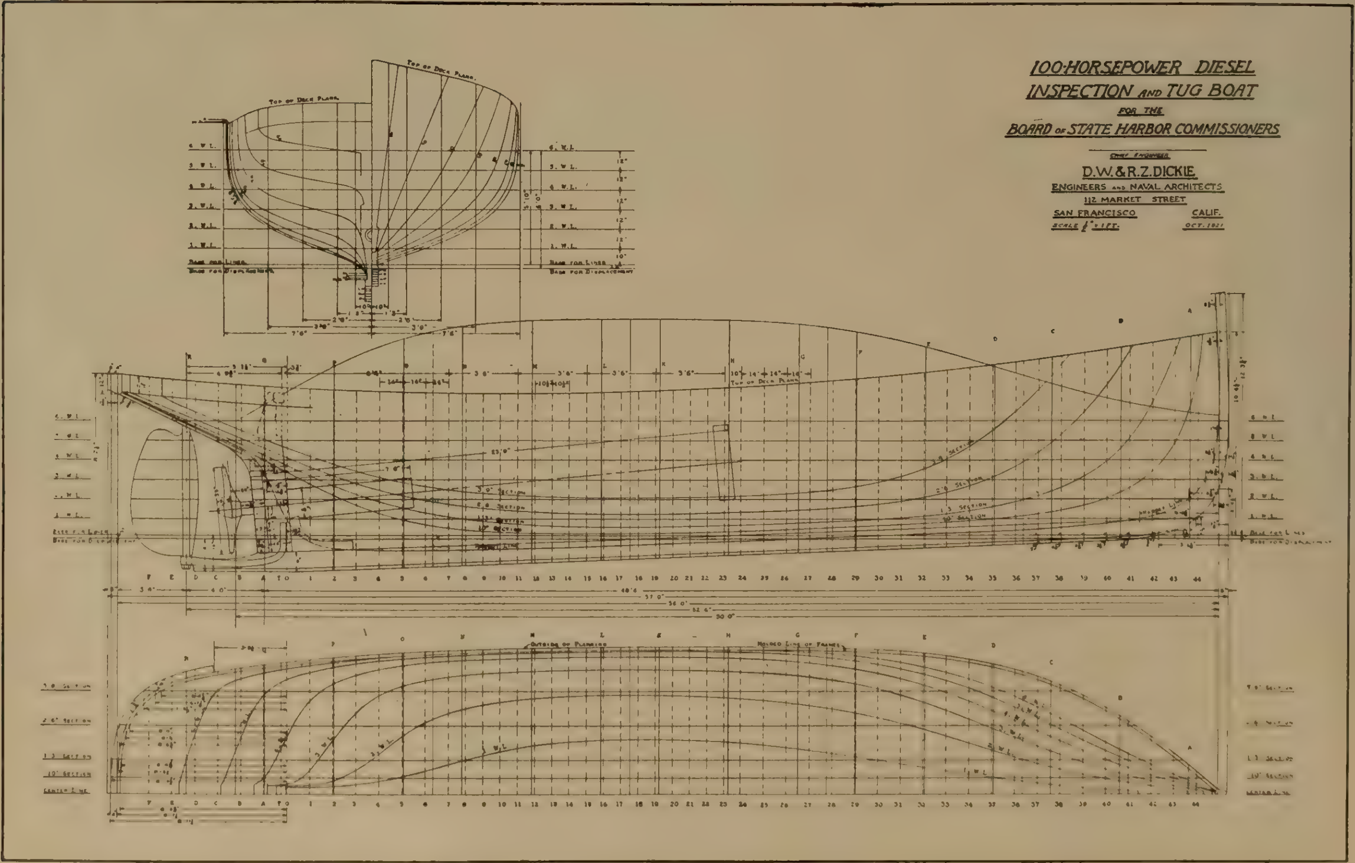


TABLE OF RESULTS

| ITEMS | | No. 2 W.L. | No. 3 W.L. | No. 4 W.L. | No. 5 W.L. | No. 6 W.L. | No. W.L. |
|---|---|---|---|---|---|---|---|
| DISPLACEMENT FULL | CU. FT. | 362 | 721 | 1198 | 1736 | 2305 | |
| DISPLACEMENT FULL | TONS. | 10.35 | 20.6 | 34.25 | 49.6 | 65.88 | |
| TONS PER INCH IMMERSION | " | .779 | 1.065 | 1.25 | 1.402 | 1.465 | |
| CENTER OF GRAVITY OF WATERPLANE AFT OF C.B.P. | FEET | -1.836 | -2.405 | -2.697 | -3.37 | -3.178 | |
| LONGITUDINAL CENTER OF BUOYANCY AFT OF C.B.P. | " | -2.47 | -2.400 | -2.42 | -2.56 | -2.81 | |
| VERTICAL CENTER OF BUOYANCY ABOVE BASE | " | 1.17 | 1.84 | 2.5 | 3.15 | 3.712 | |
| TRANSVERSE METACENTER ABOVE CENTER OF BUOYANCY | " | 6.202 | 6.88 | 6.062 | 5.101 | 4.216 | |
| TRANSVERSE METACENTER ABOVE BASE | " | 12.372 | 8.72 | 8.562 | 8.251 | 7.928 | |
| LONGITUDINAL METACENTER ABOVE BUOYANCY | " | 94.8 | 71.6 | 57.35 | 48.50 | 41.84 | |
| MOMENT TO CHANGE TRIM 1 INCH. | FT. TONS | 1.551 | 2.35 | 3.073 | 3.73 | 4.34 | |
| MIDSHIP AREA | SQ. FT. | 12.0 | 23.6 | 37.51 | 52.4 | 67.15 | |
| WETTED SURFACE | " | 530 | 686 | 836 | 968 | 1084 | |
| COEFFICIENTS | | | | | | | |
| BLOCK COEFFICIENT | | .338 | .367 | .416 | .466 | .509 | |
| PRISMATIC COEFFICIENT | | .603 | .611 | .638 | .661 | .687 | |
| MIDSHIP AREA COEFFICIENT | | .561 | .601 | .652 | .703 | .741 | |
| WATER PLANE COEFFICIENT. | | .612 | .683 | .730 | .791 | .816 | |
| VERTICAL PRISMATIC COEFFICIENT | | .553 | .537 | .570 | .589 | .624 | |

boat had better be designed for 12-foot stock.

Second: Oak of large sizes cannot be bent around a circle smaller than a certain definite radius.

This smallest radius curve practically fixes the shape of the bilge of the boat and the length of the frame therefore fixes the beam and the depth.

The table gives the results of the complete calculations and shows that the beam is just sufficient to give proper stability along with the other features.

Therefore, if a larger engine than 100 horsepower is used, the limitations of draft in going up San Pablo Bay, Petaluma Creek or out to the log boom at Hunters Point, require that the boat have more beam than 15 feet, which means that a complete change in design from bent frame to sawed frame construction must be used.

Sawed frame construction requires that the boat have thick ceiling inside, which, in addition to the extra weight of the frames and the engine, means that a still greater addition to the beam be made than that necessary to maintain a fixed amount of space in the boat.

The calculations show that the beam of the boat should be about 16 feet 6 inches with the draft about 5 inches less than that of the boat for the harbor board shown in the line plan, the present draft being 6 feet 8 inches. This draft was necessary to get the water to the propeller, as the boat is quite full in the model.

If it were not for the enormous savings made by the Diesel engine, the extra cost of all this might cause some owners to pause before investing, but the savings soon amortize boat, engine and equipment.

# The Electric Fish Stop

IN the article entitled "An Electric Fish Barrage," which appeared in Pacific Marine Review for October and was quoted in the Literary Digest of November 26, C. D. Hessey, game commissioner of Yakima County in Eastern Washington, is credited with working out the idea of the electric fish stop. This is a misstatement due to a misunderstanding on the part of the Seattle correspondent of Pacific Marine Review.

C. D. Hessey was responsible for introducing the fish stop into the streams of Yakima County, its first commercial application so far as the writer knows. The fish stop was invented by H. T. Burkey, who applied for letters patent on this device in September, 1917, and received United States patent No. 1269380 on June 11, 1918, and a further patent on improvements to the same device on January 21, 1919. Mr. Burkey demonstrated this device to Mr. Hessey, and Mr. Hessey, immediately recognizing its value, introduced it for practical trial at the headgates of two irrigation ditch systems in Yakima County.

Mr. Burkey in 1917 gave a demonstration at the Washington office of the Bureau of Fisheries, which was reported in the Fisheries Service Bulletin of December 1 of that year. The following is a quotation as to the results of this demonstration:

"The essential feature of the device is the passage of a series of alternating electric currents through the water between successive pairs of electrodes placed on the opposite banks of the ditch. The voltage of these currents increases from the head of the ditch outward, so that a fish swimming into the canal would be subjected to a current of progressively greater potential and discomfort as it proceeds. The exhibition, which was witnessed by members of the bureau's staff and by representatives of the Reclamation Service, demonstrated that fish would flee from the electrified areas always in the direction of decreasing potential, and that they would not pass from a neutral zone into a strongly electrified one."

Pacific Marine Review is satisfied that the device is one of great merit and that it should have wide application and trusts that the publicity received through this article will be of great mutual benefit to the inventor and to the fish and game protectors in many of our western states.

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### TRANSPORTATION COSTS

(Continued from page 52)

of their older ships, the average age of the company's fleet was 4.12 years and the average value £8, 8s., 9d. per deadweight ton, depreciation being figured at 6-2/3 per cent on first cost.

In 1915, having disposed of all their steamers, the average age of the company's fleet had fallen to 2.18 years, and the average book cost, after deducting 6-2/3 per cent of first cost, was £10, 12s. per deadweight ton.

During 1911 the company chartered twenty-six steamers of 160,000 deadweight capacity, to help out its own fleet of steamers of 100,000 deadweight tons.

On December 31, 1912, the company's fleet consisted of thirteen steamers of 72,440 deadweight tons and two motorships of 15,050 deadweight tons. During 1912 twenty-eight steamers of 170,000 deadweight tons were chartered.

(Continued on page 62)

# MARINE ENGINEERING

## ELECTRIC PROPULSION OF MERCHANT SHIPS

By W. E. THAU*

THIS paper will deal primarily with the electric propulsion of ships, except wherein a comparison of some particular feature or characteristic warrants a reference to some other type of drive.

**General Requirements.**— The ultimate purpose of a merchant ship is to earn money. From this standpoint, the factors of reliability, economy, weight, space, cost, operation and maintenance are involved in the propulsive equipment. Therefore the type of drive best suited is that which excels in all or the most important of these factors. The relative importance of these items varies with different ships, depending upon the trade route, cargo, etc., with the result that there is a definite and logical field for each of the principal types of drives, such as reciprocating engine, geared turbine, turbine electric, Diesel and Diesel electric. Since many general comparisons of the principal types of drives in regard to these factors have been given in recent articles in the technical press, it is not the intent of the present paper to take up this phase of the subject, but rather to analyze the principal types of electric propulsive equipments and to show in general how they fulfill these requirements.

**Reliability.**—The universal use and the indisputable success of electrical apparatus on land is sufficient testimony in behalf of its reliability. The absence of reciprocating parts makes electrical apparatus with its simple rotation as reliable as can be desired. It can almost be said that there are no mechanical troubles with electrical machinery. Broadly speaking, there are no new principles involved in the application of electrical apparatus to ship propulsion. It is true that ship conditions differ from land conditions in certain respects, but there is no phase of the application which presents any really serious difficulty. The most important adverse condition is the deleterious effect of salt and moisture, which is easily surmounted by proper insulation of the windings and circuits, as is obvious from the several successful years of operation of present electric installations. There can, therefore, be no question as to the reliability of eleccal propulsive equipment.

**Economy.**—Economy is an important factor and must be given due consideration. To properly analyze this item, it is necessary to consider all equipment involved in the propulsion with respect to fuel, water, lubricant and supplies. The relative proportions of these items vary considerably in the different types of propulsive equipments. The turbine electric and the geared turbine compare very closely in economy when all items are considered. The losses in the reversing elements of geared turbines, the losses in the gears and the power required to circulate the additional lubricating oil detract appreciably from the gain which the geared turbine would otherwise have over the turbine electric because of the inherent electrical losses in the latter. Generally speaking, the net economy of a properly designed and constructed geared-turbine drive should be better than a turbine-electric drive, even though full advantage is taken of every practical source of gain in the latter. The difference, however, is perhaps hardly of sufficient magnitude to be the dominating factor in arriving at a final selection. The economy of a reciprocating engine drive is obviously poorer than that of a properly designed turbine drive of either type, for the reason that the reciprocating engine cannot utilize the same expansion of the steam.

It has been advanced that the turbine for the turbine-electric system, being a one-direction rotation machine, can utilize higher superheat than the geared turbine, because of the reversing element of the latter, thus resulting in better overall economy. With the present installations this condition is true to some extent. However, with proper attention given to this factor, geared turbines can be designed to operate without detriment with steam superheated 150 to 200 degrees Fahrenheit, which is fairly close to the practical limit of superheat on board ship, as there are other items aside from the turbines which are affected by high su-

**A notable recent example of turbo - electric propulsion, the United States Coast Guard cutter Tampa, one of four built by the Union Construction Company of Oakland, California. This vessel, almost immediately after her trial trip, completed a very successful voyage from San Francisco to Baltimore by way of the Panama Canal, achieving a non-stop record and proving under severe conditions the reliability of this type of drive.**

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* Read at the twenty-ninth general meeting of the Society of Naval Architects and Marine Engineers, held in New York, November 17 and 18, 1921.

perheats to the extent of fixing limitations.

Obviously from a fuel-consumption standpoint, the direct Diesel and Diesel-electric propulsive equipments offer by far the best economy. Of these two types, it would appear offhand that the direct Diesel drive is decidedly superior to the Diesel electric; however, it will be shown later that there are certain limitations in the direct Diesel drive which offset its advantage in fuel per brake horsepower hour over the Diesel electric. Here again it is obvious that all items related to the propulsive equipment must be taken into consideration to obtain the ultimate answer.

**Weight.**—The item of weight would probably show more variance than other items, owing to differences of arrangement, design, foundations, etc., in the practice of the several shipbuilders. The importance of weight depends upon the type of ship, cargo and trade route. Usually, however, weight is an important item, as it has a direct effect upon the total fuel consumption and the amount of cargo that can be carried with a given displacement. Here again it is necessary to consider all items related to the propulsive equipment. A correct comparison of weight necessitates that the equipments under consideration be on the same basis relative to overload, factor of safety and arrangement. This is particularly important in comparisons between electric-drive equipments. Where one equipment affords an advantage in flexibility of reserve, however, it is usually at some sacrifice in weight, and an allowance must be made.

**Space.**—Space is important in that it has a direct bearing upon the bulk of cargo that can be carried. Its relative importance depends somewhat upon the location of the machinery, i. e., whether the machinery is located amidship or aft, or both. Space is affected by the distribution of machinery, and the relative saving depends somewhat upon the practice of the various shipbuilders in that respect. General analysis of the space factors which have been made thus far gives the advantage to the direct-connected Diesel and Diesel-electric types of propulsive equipment, the saving being effected by the elimination of the boilers and reduction of fuel and water tanks. Of the turbine-electric and geared-turbine types, the space factor is in favor of the geared turbine, except in special cases. The general arrangement of the engine-room, number of propellers and the beam of the ship have a direct effect upon the space occupied as a result of machinery distribution. By locating the condensers underneath the turbines in electric drives, the total floor space can be greatly reduced.

**Cost.**— A definite comparison of costs is still a difficult task, owing to the continued unsettled conditions. On the basis of equal performance in regard to propeller torque and speed, the cost, including all items related to the propulsive equipment, should run in the order of direct Diesel, turbine electric, geared turbine and Diesel electric, the latter being the cheapest. The paradox in the relative cost of direct Diesel and Diesel electric is explained by the condition that small Diesel engines and generators for Diesel drives can be manufactured ultimately on a large production basis and stocked, whereas the engines for direct Diesel drive and, to a large extent, the two types of turbine drive, because of their large size and weight, must almost of necessity be a building proposition. On the basis of standardized drives there should not be a great deal in favor of the geared turbine as compared with the turbine-electric drive. This comparison will vary somewhat wilth the different manufacturers.

The initial cost of the propulsive equipment has a direct effect upon the net earning power of the ship, because of interest, depreciation and insurance charges, and therefore cost is an important item.

**Operation.**—In regard to operation it is realized that the present operators are largely men who are more familiar with reciprocating engines than with other types of machinery, and that for this reason certain difficulties are likely to be encountered in placing electrical equipments in their hands. The author believes that this thought should not be a consideration, as it is a temporary condition only. The horse-car driver became the motorman of the electric car, the reciprocating plant operator became the turbine plant operator in the central station, the steam locomotive engineer became the electric locomotive engineer (engineers now operating electric locomotives are reluctant to return to the steam locomotive), and similarly countless examples may be mentioned to show that change in machinery represents no obstacle. Successful operators of electrical machinery need not have sufficient knowledge of it to understand the details of its design. This is not the case on land, and there is no greater reason for it on the sea. The operator should, however, know the operating characteristics of electrical apparatus and how to take care of it.

The same question was raised in the case of geared turbines only a few years ago, yet today there is nearly a sufficient number of competent geared-turbine operators to take care of all the geared-turbine ships. The same will be the case with operators for electric ships. It is merely a matter of training and education, and it is certainly a reflection upon the intelligence of the age to classify the present limited knowledge as an obstacle for consideration.

On page 62 appears a probable list of the operating personnel for the principal types of drives. The cost of operating personnel as based upon this list would therefore be in the order of direct-connected Diesel, turbine electric, geared turbine, reciprocating engine, and Diesel electric.

**Maintenance.**—Although there are practically no data available on the maintenance of electrical propulsive equipments, except battleships, there is no reason to anticipate any great difference between sea and land practice. As a matter of fact, there is reason to anticipate less maintenance for the reason that the load conditions and control operations are less severe than is the case with most land installations involving large machinery. If the equipment is given proper care and inspection the maintenance item will be low, as the absence of rubbing parts (except for the bearings) leaves little to get out of order. Electrical machinery does not wear as is the case with other machinery. Furthermore, all probable repairs are such as can be made aboard the ship without the use of an elaborate machine shop.

**Performance Characteristics.**—The inherent performance characteristics of electrical machines are particularly well suited to ship propulsion. Having identical operating characteristics in either direction of rotation, all types of electric drive inherently afford, or can be made to afford, full torque and power for reversal. For reasons of economy, space and cost, the reversing element of a geared turbine is designed to give only 40 to 60 per cent power in the reverse direction. It has been claimed that full reverse power is not essential to a merchant ship, and this is true under ordinary conditions. In emergency, however, it is desirable to stop the ship very quickly, and in this connection it might be pointed out that the electric ship can be stopped in considerably less time than a geared-turbine ship. This is not altogether the result of less backing power, but is due to a great extent to the inefficiency of the reversing element of the geared turbine causing an enormous draft on the boilers which greatly reduces the steam pressure.

In reversing, the energy put into the screws by the action of the water and the stored energy in the rotating parts attached to the propeller shaft must be dissipated in some manner. In the case of the geared turbine this energy is consumed in doing work on the steam. In the case of A. C. electric drives, the energy of reversal is dissipated in the motor and generator windings, the rotors of the motors, or in external resistors connected to the rotor circuits, depending upon the type of motor used. In D. C. electric drives the reversal energy must be absorbed elsewhere in the system. The amount of energy to be dissipated or absorbed in the case of a given ship depends entirely upon the time taken to stop the screws. The instant the screws commence to turn over in the reverse direction, the system must supply the energy and all further stopping energy is dissipated at the propellers. There are two factors to be considered in stopping, namely, the energy returned through the propellers and the stored energy in the propellers and the motor armatures. Analysis shows that reversing even at full speed is not a serious problem and that it does not place as severe requirements upon the electrical machinery as does turning with hard-over rudder. The details of the distribution and absorption of the energy of reversal would occupy too much space to be discussed at this time. Suffice it for the present to say that the inherent facilities afforded by electrical systems for dissipating energy and for giving full power in either direction are what make the electric drives ideally suited for stopping. The time required to stop an electric ship is the same as, or less than, that of other drives.

## Description of Electrical Propulsive Equipments

**General Classification.**— Electrical systems for ship propulsion may be classified into two general types from the standpoint of the prime movers, namely, turbine electric and Diesel electric. Due to the inherent performance of these two types of prime movers, both kinds of electric machinery are used—A. C. machinery with turbine electric drive because the A. C. generator is inherently suitable for direct connection to the economical high-speed turbine; and D. C. machinery with Diesel-electric drive because the inherent characteristics of the D. C. generators are ideally suited to Diesel engine performance.

The electrical equipment for turbine-electric drive may be further subdivided as follows, in regard to the type of motor:

1. Induction: Wound secondary—ordinary, and with power factor correction; squirrel cage; combined squirrel cage and wound secondary.
2. Synchronous.

In the case of the Diesel-electric drive there is no broad subdivision. As a minor classification, this type of drive might be subdivided with respect to the method of generator operation, i. e., series and parallel. However, series operation is so vastly superior that parallel operation can be disregarded except for the purpose of comparison.

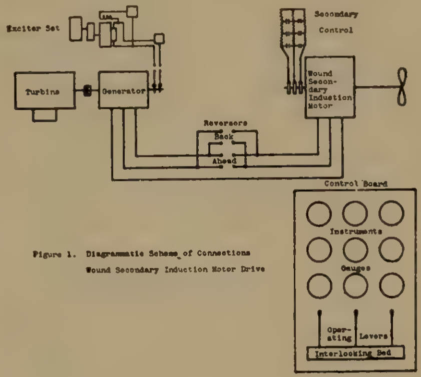

Figure 1. Diagrammatic Scheme of Connections Wound Secondary Induction Motor Drive

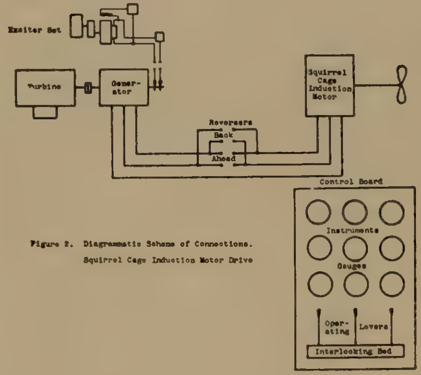

Figure 2. Diagrammatic Scheme of Connections. Squirrel Cage Induction Motor Drive

**Units Involved.**—A complete turbine-electric drive involves the following apparatus: boiler plant, evaporation plant, condenser plant, turbine, generator, motor, oiling system, exciter set, control.

A complete Diesel - electric drive involves the following apparatus: Diesel engines, generators, motors, small auxiliary air compressors, air bottles, exciters, fuel pumps (if not attached to the engine), lubricating pumps (if not attached to the engine), control.

**Turbine Electric.**— With turbine-electric drive, the electrical equipment is of the A. C. type, principally for the reason that A. C. turbo-generators are inherently better suited for the high economical speeds of turbines. The speed at which the turbine operates is influenced by the propeller speed because of the limitation in the number of poles of the motor. Theoretically, an A. C. motor can be built for any even number of poles, but in practice such factors as power factor (induction motor), diameter and assembly fix the upper limit in the neighborhood of 60 to 72 poles. As the motor speed and number of poles fix the generator and turbine speed, there is consequently an approximately fixed limit to turbine speeds. Incidentally, in the case of practically all merchant ships, this speed is lower than the most economical speed of the turbine. As the propeller is most efficient when designed and operated at low speeds, it is advisable not to exceed 90 to 100 revolutions per minute for the ordinary merchant ship.

Assuming a propeller speed of 100 revolutions per minute, a 60-pole motor and a 2-pole generator, the generator and consequently the turbine would operate at 3000 revolutions per minute (neglecting the slip in case of the induction motor). This gives a reduction from the turbine to the propeller of 30:1, which is approximately the same irrespective of the type of motor used.

Figure 1 shows a diagrammatic scheme of connections for an induction - motor drive of the wound secondary type. Power is supplied from the turbine - driven generator to the induction motor through one of the reversers. The generator is excited from one of the auxiliary geared-turbine D. C. sets. Whether the auxiliary set would supply generator excitation only or simultaneously furnish ship's auxiliary power depends principally upon the electrification of engine - room auxiliaries, winches, etc.

The turbine is under the control of a governor capable of maintaining constant speed over about 75 per cent of the entire speed range. The governor speed-control valve is regulated from the control stand by an oil relay valve or system of rods and levers, depending upon the type of governor used. The propeller speed is adjusted by throttling the turbine as in the case of a geared-turbine drive. The turbine is started and brought up to its "idling speed" by the throttle valve at the turbine.

Similarly the generator field switch and rheostat and the ahead and back switches are controlled from the control stand by means of levers. These levers are mechanically interlocked, so that it is necessary to follow the proper sequence of operations in starting, stopping and maneuvering. Usually the reverses are interlocked with the field lever so that the field lever must be in the "off" position before the reverses can be opened or closed. Similarly the field is interlocked with the turbine speed control lever so that the control valve must be set for low speed before the field can be opened or closed.

The secondary control is automatic, being either of the solenoid contactor or motor-operated contactor type. The actuating means is energized through contacts on the field lever near the end of its stroke. This arrangement insures the establishment of voltage at the motor before closing the secondary accelerating switches. Similarly, moving the field lever to the "off" position opens the secondary switches.

The operating levers and a complete complement of electrical instruments and steam gauges are arranged convenient to the operator, the instruments and gauges being mounted on a panel directly above or in front of the levers. By observing the instruments, the operator will be kept informed at all times of the performance of all machines, even though the machines be obscured from his view.

By a suitable arrangement of the switches and control levers, the entire maneuvering of a ship of any size and any number of screws can be under the complete control of one operator. The interlocking system necessitates the following sequence of operation:

**A. Starting Ahead (Turbine Idling):**

1. Close reverser in "ahead" position.
2. Close field and establish excitation.
3. Adjust turbine speed to desired value after secondary is completely short-circuited. (Indicated by pilot light.)

**B. Stopping:**

1. Move turbine speed control lever to idling position.
2. Move field lever to "off" position.
3. Move reverser to "off" position.

**C. Starting Back:**

1. Close reverser in "back" position.
2. Close field and establish excitation.
3. Adjust turbine speed to desired value after secondary is completely short-circuited.

**D. Reversing, from Ahead Operation:**

1. Move turbine speed control lever to idling position.
2. Move field lever to "off" position.
3. Move reverser from "ahead" to "back" position.
4. Move field lever to full excitation.
5. Bring up turbine speed after motor has pulled into step.

The above description applies to a single-screw drive having but one turbine set. For a multiple-screw ship having generating sets for port and starboard sides, the operation would be the same for each side of the ship, as just described.

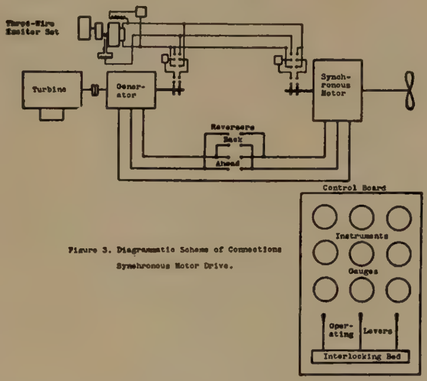

Figure 3. Diagrammatic Scheme of Connections Synchronous Motor Drive.

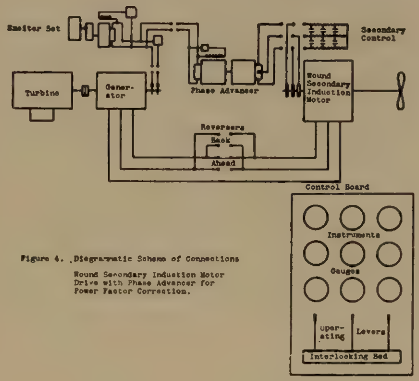

Figure 4. Diagrammatic Scheme of Connections Wound Secondary Induction Motor Drive with Phase Advancer for Power Factor Correction.

The above operations are based upon switching when the current in the circuits has been reduced to very low values, or nearly dead circuit conditions. This arrangement is not really necessary, as with such small powers it is not essential to open the generator field; however, it may be justified in the light of conservatism. In any event, the reversers are so designed that they are entirely capable of opening full power.

The salient features of the wound secondary induction motor drive are its inherent torque characteristics and the ease of handling. While the secondary control necessitates a few additional switches, this is fully compensated for by the fact that the propeller energy of reversal and the slip energy of reversal and starting are dissipated in resistors external to the motor. The importance of this is dependent upon the amount of reversing that is done, particularly from full speed. This system, therefore, represents the most conservative arrangement of turbine-electric drive.

The squirrel cage motor system is shown in Figure 2, and it will be noted that the electrical connections are the same as for the wound secondary motor system, except that there is no secondary control. This system is therefore somewhat simpler than the wound secondary motor system from an electrical connection standpoint, both inside and outside the motor. It also has a slight advatage in cost in that the motor is less expensive to build. The squirrel-cage motor is shorter because of the absence of collector rings. It has a disadvantage in conservatism and torque characteristics.

The power factor of either of the induction motor systems is less than unity, the exact value depending upon the number of poles and certain design features. For the ordinary merchant-ship requirements these motors would have power factors of approximately 70 per cent, the wound secondary motor having the higher power factor of the two by a small amount. The induction motor drive, therefore, requires a generator with KVA. capacity in excess of its KW. capacity, which adds somewhat to its weight and size, and which detracts a very small amount from its efficiency.

The efficiency of the squirrel-cage induction motor of ordinary design is slightly less than that of the wound secondary motor, for the reason that sufficient permanent resistance must be incorporated in the rotor windings to obtain the required torque for reversal without excessive current. In motors with special double secondary windings, the required torque can be obtained without excessive current, and the running efficiency can be improved somewhat. Such motors are in use on propeller drives at the present day.

**Turbine Electric (Synchronous.)**—Figure 3 shows a diagrammatic scheme of connections for a synchronous motor drive. Power is supplied from the turbine-driven generator to the synchronous motor through one of the reversers. The generator and motor fields are excited from a three-wire D. C. exciter set. The synchronous motor system differs from the induction motor system only in so far as the synchronous motor itself affects the details of control and generator capacity, the main features of turbine-electric drive being otherwise the same.

Although the characteristics of the ordinary synchronous motor are not suitable for ship propulsion, the synchronous motor can be modified to give characteristics which meet the requirements. The modification consists in providing the rotor with a substantial induction winding of such design and arrangement as will not seriously detract from certain purely synchronous motor characteristics which are desirable.

The maneuvering operations can be accomplished in more than one way. If appreciable torque is required to reverse, the method which appears to be most favorable is to utilize the synchronous characteristics and the induction characteristics at different stages of the reversing cycle. The motor is stopped as a synchronous generator loading into the generator windings which form a dead load (generator field not being excited), then is brought up to nearly synchronous speed in the reverse direction as an induction motor, and finally is pulled into step with the generator as a synchronous motor. With this method, the sequence of operation for reversing would be approximately as follows:

1. Reduce turbine to idling speed (25 per cent).
2. Open generator and motor fields.
3. Reverse motor connections.
4. Apply motor field excitation, bringing motor to rest.
5. De-energize motor field.
6. Energize generator field to double value, bringing the motor to nearly synchronous speed as induction motor.
7. Apply normal excitation to motor field, pulling motor into synchronism with generator.
8. Adjust speed to desired value.

The method described above is preferable where appreciable torque is required during reversing. Usually, however, sufficient torque will be developed by the simpler method of reversing as an induction motor, in which case the cycle of operation will be as follows:

1. Reduce turbine to idling speed (25 per cent).
2. Open generator and motor fields.
3. Reverse motor connections.
4. Energize generator field to double value, bringing motor to rest and reversing it to nearly synchronous speed, as an induction motor.
5. Apply normal excitation to motor field, pulling motor into synchronism with generator.
6. Reduce generator field to normal.
7. Adjust speed to desired value.

This method, therefore, simplifies the sequence to the extent of omitting one step and eliminating the generator action of the synchronous motor.

Although eight and seven steps respectively have been indicated in the sequence, as a matter of fact some of the steps are combined so as to reduce the actual number of levers and operations to a reasonable amount.

Although the synchronous motor requires special design and introduces additional complications in the control, it has the important inherent characteristics of unity power factor. The unity power factor results in slightly decreased weight and size, and consequently less cost of the motor and generator. Taking the drive as a whole, and considering that both motor and generator must be excited from a separate source at a cost of at least twice the steam per KW. hour as the main turbine, the efficiency improvement over the induction motor drive is more apparent than real.

**Turbine Electric (Induction with Power Factor Correction).**—The unity power factor advantage of the synchronous motor system is also available with a wound secondary induction motor system in which the low lagging power factor is corrected to unity. This arrangement not only provides a system of the same weight, space and cost of the synchronous system, but in addition possesses the superior torque characteristics and simplicity of control of the wound secondary induction system.

The diagrammatic scheme of connections is shown in Figure 4. It will be noted that this is the same as the wound secondary induction motor system shown in Figure 1, except that power factor corrective apparatus has been added. The scheme functions in the same manner and sequence as that shown in Figure 1 until the motor is in step with the generator, and at this point the power factor corrective apparatus is caused to function. The corrective apparatus consists of a Le Blanc phase advancer driven by a small D. C. motor, the speed of which may be varied to suit the power factor correction desired. The function of the phase advancer is somewhat similar to that of the D. C. exciter in the case of the synchronous motor in that it supplies excitation to the induction motor. The connection is made to the secondary or rotor winding, and thus excitation is supplied through the secondary instead of through the primary, with the result that the primary current is all "power" current, which means "unity" power factor.

The phase advancer is a small commutating machine of very simple construction. The losses in the phase advancer consist of the internal copper loss due to the secondary current, almost negligible iron losses, friction, windage and brush drop. The total of these losses is very little and compares very favorably with the excitation power of the synchronous motor.

The induction motor used with this system is simple in construction, smaller, lighter and consequently less expensive than the motor used with the ordinary wound secondary induction motor system. The generator is the same as that for the synchronous motor drive.

**(To be continued)**

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## TRANSPORTATION COSTS

(Continued from page 57)

On December 31, 1913, the company's fleet consisted of eleven steamers of 65,440 deadweight tons and four motorships of 34,930 deadweight tons. During the year 1913 thirty steamers of 190,000 deadweight tons were chartered.

On December 31, 1914, the company's fleet consisted of eleven steamers of 72,780 deadweight tons and eleven motorships of 67,187 deadweight tons. During the year 1914 twenty-four steamers of 170,000 deadweight tons were chartered.

On December 31, 1915, the company's fleet consisted of no steamers, but of sixteen motorships of 114,611 deadweight tons. During the year 1915 a large number of steamers were chartered, but the figures as to deadweight are not available.

TABLE OF PROBABLE OPERATING PERSONNEL

| | Reciprocating engine* | Geared turbine* | Turbine electric* | Direct-connected Diesel | Diesel electric |
|---|---|---|---|---|---|
| *Total crew* | | | | | |
| Chief | 1 | 1 | 1 | 1 | 1 |
| 1st assistant | 1 | 1 | 1 | 1 | 1 |
| 2nd assistant | 1 | 1 | 1 | 1 | 1 |
| 3rd assistant | 1 | 1 | 1 | 1 | 1 |
| Junior engineers | 0 | 0 | 0 | 3 | 0 |
| Electricians | 0 | 0 | 1 | 1 | 1 |
| Oilers | 3 | 3 | 3 | 6 | 6 |
| Firemen | [illegible] | 6 | 6 | 0 | 0 |
| Total | 13 | 13 | 14 | 14 | 11 |
| *On each watch* | | | | | |
| 1st, 2nd or 3rd | 1 | 1 | 1 | 1 | 1 |
| Junior engineers | 0 | 0 | 0 | 1 | 0 |
| Electricians | 0 | 0 | 0 | 0 | 0 |
| Oilers | 1 | 1 | 1 | 2 | 2 |
| Fireman | 2 | 2 | 2 | 0 | 0 |
| Total | 4 | 4 | 4 | 4 | 3 |

* Based on oil-burning ships. For coal ships, the operating personnel would be augmented by three coal passers

# PASSENGER LINER DESIGN

By E. H. RIGG

Naval Architect New York Shipbuilding Corporation

COMMENTING on the post-war return to very conservative practice in the design of ocean liners, E. H. Rigg in a very comprehensive paper read before the annual meeting of the Society of Naval Architects and Marine Engineers analyzes the trends of the various factors in the design of that complex mechanism, the modern passenger vessel. This article is made up of excerpts from Mr. Rigg's paper.

### Trend of Design; Ocean Passenger Ships

As an indication of this, the following classes of ships designed in part and estimated on, since January, 1918, by one large shipyard in this country, may be of interest:

| Lgth. bet. perpdls. feet | Speed knots | Cabin passengers | Deadweight |
|---|---|---|---|
| 400 | 15 | 100 | 4350 |
| 600 | 18 | 1460 | 15000 |
| 450 | 23 | 410 | 3700 |
| 500 | 16 | 250 | 9000 |
| 550 | 15¾ | 1830 | 8650 |
| 475 | 14½ | 445 | 5530 |
| 360 | 13½ | 50 | 4100 |
| 450 | 16 | 255 | 6000 |
| 400 | 15 | 200 | 3900 |

Several of these ships had third-class and steerage passengers in varying numbers. These quarters were portable to a large extent, so only the first and second-class quarters and permanent third-class cabin accommodations have been listed above, thus giving a better guide to the characteristics of the vessel. In the 600-foot ship, accommodation for 700 third-class passengers in permanent cabins is included; also in the 550-foot ship 1160 such third-class are included. The list thus gives the real cabin accommodation, whether first, second or third.

The 23-knot ship was primarily intended for a coastwise run, but also for trans-Pacific, so that she is correctly rated as an ocean-going ship, though whether the full 23 knots would be maintained on a deep sea run is problematic.

The average length works out at 465 feet, a very modest figure for nine typical passenger ship designs, and, omitting the 23-knot ship, the speed averages 15½ knots. It would seem fair to regard the high speed of 23 knots in a 450-foot ship as quite exceptional. It is worth noting that 15½ knots is quite modest for a 465-foot ship and that it checks up with the tendency noted above. These ships are uniformly of the shelter or shade-deck types with ample superstructures amidships and generally with forecastles.

Fully half these inquiries were from foreign owners, an encouraging sign.

Besides the above listed vessels, other inquiries not involving detailed design work were received; they lined up well as to type with those given and do not change the indication of the trend.

As regards proportion, the old lingering tendency to narrow beams is at last giving way; it is not going fast, but it is yielding to two influences; the old ship that capsizes when handling light in harbor, unless ballasted, evidently is a nuisance, and has plagued a good many people. The war has served to emphasize a tendency already to be seen by those on the inside, and that is to give more metacentric height and listen less to the discomfort of passenger talk that was so prevalent.

A live passenger is worth several dead ones, even if he were fractionally more seasick than the comfortably drowned ones. Personally I feel that you have to go to metacentric heights far higher than the prevalent 18 or 24 inches in order to get appreciable discomfort; in other words, get all the data you need by studying stability and rolling features in successful ships, then adopt a G. M. about twice pre-war standards and you will have a ship that is not too stiff. I cannot claim enough seagoing experience to dogmatize too strongly, though I do believe that the talk of discomfort has been overdone, having been to sea a little in almost all kinds of vessels, principally with high G. M.

The other cause leading to more beam is the finding by Admiral Taylor and other investigators working in the experimental model basins, to the effect that more beam can often be given a ship and enough coal saved by fining up (for the same deadweight) to pay for the little extra steel weight generally involved.

In other words, the bugaboo of narrow beam is under investigation and is getting to be in a bad way. It must, however, be noted that stability considerations due to the flooding of a damaged ship point to caution in increasing beam.

War experience has given us a large volume of data concerning the behavior of flooded and sinking ships and this, intimately associated with subdivision lessons, will ultimately give us safer all-round ships.

### Bulkhead Subdivision

This subject has been very much to the front since the spring of 1912, when the world was shocked by the disaster which befell the Titantic. Our own transactions, as well as those of the Institution of Naval Architects, have been favored with many able papers on the subject; lessons of the war are now at hand, so that detailed treatment of the subject is neither necessary nor does it properly belong in this paper. As the question stands today we have the results of the international convention to work on together with the British Bulkhead Committee's Report, followed up by such papers as those of Abell, Benvenuti, Chamberlain, Denny, Dickie, Donald, Finlay, Foster-King, Gatewood, Hovgaard, Lovett, Orlando, Robb, Wall, Webster and Welch. As several of these gentlemen have contributed two or three papers, it is obvious that the above list contains much valuable data. We also have governmental and classification society instructions to guide us.

Our Pacific coastwise passenger steamers should have more attention in respect to bulkheads. A rock-bound and apparently foggy coast has given us two major accidents this year, the Governor and the Alaska; these vessels were both built before 1912. These accidents have been preceded by others of a similar nature in past years.

The accounts, as we read them in the East, generally run about the same as to the speed at which the ships go down and the by no means light casualty lists which follow their going. It is not intended to cast any reflection on Pacific Coast navigation. Here we have vast extents of sandy shores which eliminate the rock-hitting risk, except in the north; also the danger spots are better known, due to longer acquaintance. The casualties on a rock-bound coast are bound to be more severe and sudden, which is another way of saying that we should pay more attention to efficient bulkheading. It is proven that good bulkheading will save many a ship altogether, also that the ones it does not finally save it will often keep afloat for hours and thus give full time for rescue work to be made effective.

### Length

In 1912 Mr. J. Foster-King presented some very interesting diagrams to the International Congress of Navigation in Philadelphia. These prewar indications of the trend are extremely valuable at this time; the diagrams are produced to 1920 and thus enable performance and estimate to be compared. For the largest type of North Atlantic liner, the 1000-footer was indicated; in the Aquitania and Majestic (Ex-Bismarck) we find prewar justification of the forecast. Coming down to the longest types for general first-class passenger service and selecting some fourteen of the most noteworthy postwar designs actually launched, we find an average length of 585 feet, the greatest being 650 feet and the smallest 505 feet—five only being 600 feet and over. Mr. King's curves gave 775 feet for Atlantic liners, excluding the leviathans, and 650 feet for general first-class liners; it is clear that the 1912 outlook has not been realized, a point also clearly brought out in several other directions; the fact that the 585-foot average includes several Atlantic liners tends further to show the reduction, the figure with which it should be compared being intermediate between 650 and 775, in a ratio difficult to get at. It seems reasonable to say that large passenger ships have been shortened by 100 feet from considerations arising out of the war. The chief influence at work is the high cost of ships, which makes it a serious question with owners as to whether they can charge passage rates high enough to realize on their investment without killing the business of passenger carrying by reason of the inability of people in sufficient numbers to pay such rates.

### Depth and Draught

It can be stated at once that the draughts adopted for large liners are not those that the naval architect would choose if he had a free hand; neither are they the ones dictated by considerations of the limitations of steel as a shipbuilding material. Terminal harbors and canals are the main deciding factors, and while a discussion of harbors, existing and projected, is not within the scope of this paper, nevertheless it may be noted in passing that the improvement and deepening of harbors are again being taken up seriously, the extensions to the facilities of the port of London recently opened being a case in point. The late Sir W. H. White contributed a valuable paper bearing on this subject, among other things, to our society in 1911; Sir J. H. Biles has shown in several papers the advantages of increased draught in large carriers, also Lord Pirrie has contributed to our knowledge on the subject. In order not to take up space with repetitions, the interested reader is referred to these papers and to the report of the Canadian Royal Commission on Oversea Communications, dated 1914, an extremely valuable document, the importance of which has evidently been masked by the war. Suffice it to say that the economics of the ship can benefit by increased draught up to the point where such increase imposes excess costs on harbor authorities, which would have to be passed back to the ship in the form of increased and excessive harbor charges.

A really first-class harbor should nowadays have a depth of at least 40 feet, and Lord Pirrie advocates 45 feet; with such depths and corresponding draughts of about 37 feet 6 inches to 42 feet 6 inches economics of transport are available. Mr. J. F. King's forecast in 1912 referred to above under "Length" is worth noting; his figures gave a 1920 draught of 36 feet 6 inches for Atlantic liners and for average passenger ships. The predicted Suez Canal depth of 30 feet came very close to being a mean draught for such ships, which showed steady increase up to a 25 to 34-foot range. Draught increases relatively and actually more slowly than length, it is hardly necessary to say.

The Panama and Suez canals are bound to exercise a profound influence on the draughts of passenger liners, the figures for which now stand as follows:

1. Panama.—A minimum depth of 40 feet in the canal, with 40 feet in the Atlantic and 35 feet in the Pacific approaches at mean low water, which means an available draught of about 38 feet.
2. Suez.—At present the available depth is 32 feet and permissible draught is 30 feet; the authorities are dredging for 34 feet 6 inches and 31 feet figures respectively.

It is to be noted that Suez has gradually been deepened by dredging from 19 feet in 1870 to 32 feet in 1920.

Liners of the future will probably not be able to avail themselves of all the draught economically desirable, for we are now approaching the region of excessive dredging costs in certain harbors.

Another big factor in restricting draught is the River Plate; many vessels now trading there on a 26-foot 6-inch limit could well have been designed for 30 feet.

### Speed and Power

Before the war we had reached 26 knots for all the way across the Atlantic, this in the Lusitania and Mauretania. In the later Cunarder Aquitania we see a reduction to 23 knots, while the large White Star boats ran in the neighborhood of 21. About the maximum for the long routes to the Cape, India, and Australia was 18 knots.

It is obvious that speed in representative liners, even on the North Atlantic, has been cut down from that which obtained before the war, which is another way of saying that this particular route is contenting itself at present, at least as far as new ships are concerned, with vessels that average up well with those on the general routes of world travel, instead of the accustomed 21 to 23 knots of the old days. In the attainment of better results, the competition in systems of propulsion does, and will to a greater extent, contribute to a lower consumption of fuel per horsepower. The problem is three-fold — lower resistance, better wheels, and more economical power plants. The question of inexperienced engine-room forces has troubled us lately, but should become less prominent as conditions improve; men gain experience and faults of design and construction are eliminated.

The new C. P. O. S. liner Empress of Canada, completed this year, has a speed that is decidedly in advance of the present trend. She will be the largest vessel on the Pacific, according to current reports, being about 120 feet longer than the American Legion type. She is announced to have made well over 20 knots on the mile and to be designed for 18 knots in service.

### The Cost of High Speed

Apart from the initial cost of the machinery necessary to obtain high speed, the fuel bills become very high. For example, consider a 750-foot Atlantic liner of varying speeds from 15 up to 30 knots; such a ship would have a beam of about 90 feet and a deep draught of 36 feet. Call the voyage 3000 miles, which gives a round figure close enough for our purpose. Remember, too, that as speed goes up cargo carrying ability goes down and passengers, mails and express matter become ultimately the sole sources of revenue, outside subsidy. The figures are about as follows:

**(Continued on Page 64, Industrial Section)**

# AMERICAN CLASSIFICATION OF AMERICAN VESSELS

By W. A. DOBSON*

CLASSIFICATION of vessels built for the merchant marine is fundamentally a matter of national importance. This view is justified by the fact that the certificate of class issued by a registration society is a guarantee that the vessel so classed is properly constructed. Such a certificate assures the owner and the insurance underwriter that the strength of the vessel is unquestionable and that its character of construction is in accordance with the standards of the classification society. The enormous risk, therefore, incidental to an inferior construction is eliminated, and only the hazards common to sea service remain to be considered. The result, therefore, of building to the rules and survey of a classification society, in so far as providing for and obtaining a proper construction goes, is the assurance that the lives of those who travel by sea, in vessels so constructed, and the vessels themselves with their cargoes are to that extent safeguarded. Life and property, so safeguarded, become a part of the nation's assets.

### Object

The purpose of any society for the registration of vessels is to classify them in accordance with their strength and seaworthiness, with proper regard, on the one hand, for the safety of life and property, and, on the other, to obtain the necessary strength and seagoing qualities without impairing the earning power of the vessel by carrying around for its lifetime an unnecessary weight of structure that reduces the cargo-carrying capacity. It would, then, appear that, among other responsibilities, a moral obligation rests upon the classification society, as representing the owners, to use every endeavor to prevent the incorporation of unnecessary weight, thereby assuring a vessel of the maximum earning capacity combined with satisfactory strength. From the time of Noah to within the last two centuries, vessels were constructed either by inspiration or from experience gained by a long series of observations on vessels built from prototypes, whose characteristics, good and bad, were carefully noted and incorporated or eliminated, as the case might be, in following designs.

### Study of Stresses on Floating Structures

With the introduction of iron as a building material, it became practicable to consider the hull proper as a girder and to closely approximate the stresses brought upon a vessel floating in a highly disturbed medium. The art of arranging the scantlings for safely meeting such stresses became the study of naval architects of all nations, and, while new combinations are constantly being developed, the general principles involved are well known and carefully considered in any standard arrangement of scantlings. As a result of such investigations, combined with many years of sea experience, tables or rules have been prepared by the classification societies which insure that vessels built in accordance therewith will have the required strength to successfully meet the varying conditions of ocean traffic. It is to be noted that such rules are not on a purely academic basis but are the result of mathematical investigation applied to sea experience with all types of construction, wherein stresses are kept within well-defined limits.

### Merchant Marine Act

The salient features of such rules were well known to the framers of the Merchant Marine Act of 1920, which, having been signed by the President of the United States, is now a law.

This act provides for the classification of vessels, other than military, owned by the United States, and for such other purposes in connection therewith as are the proper functions of a classification bureau. The act directs that all departments, boards, bureaus and commissions of the government recognize the American Bureau of Shipping as their agency, so long as that bureau continues to be maintained as an organization which has no capital stock and pays no dividends. This being the case, it is deemed proper and opportune to review the history of the only existing American classification society and to show its growth and present condition.

### History

On April 22, 1862, the legislature of the State of New York incorporated the American Shipmasters' Association, the incorporators being men well known in shipping and maritime insurance.

The purposes of the association were those of collecting and disseminating information upon subjects of marine or commercial interest, of encouraging and advancing worthy and well-qualified commanders and other officers of vessels in the merchant service, of ascertaining and certifying the qualifications of such persons as shall apply to be recommended as commanders or officers, and of promoting the security of life and property on the seas.

The last-named purpose necessarily carried with it the preparation and adoption of rules for construction and survey which, when complied with in the construction of a vessel, entitle it to classification in the association.

The association continued to function under the title of "The American Shipmasters' Association" until the first of November, 1898, when, by order of the Supreme Court of the State of New York, the association was authorized to assume another corporate name, namely, "The American Bureau of Shipping."

The bureau affairs are administered by representatives of shipping interests in the broadest sense, and, although the bureau is incorporated, it has no shares upon which dividends are payable. In other words, it has no capital stock and pays no dividends.

During the period which had elapsed from its original incorporation as The American Shipmasters' Association and its continuation as The American Bureau of Shipping, the work of classification had been chiefly confined to American-built coastwise vessels. At one time the shipping interests of the United States under federal aid, in the shape of wise legislation and encouragement, had assumed large proportions, but upon the withdrawal of such aid, and acquiescence with treaties decidedly favorable to foreign shipping, these interests gradually declined. This shrinkage, resulting in the relatively small amount of merchant shipbuilding done here, combined with the lack of vision on the part of the bureau in not making alliances outside of this country, caused its power and influence to parallel the downward tendency of American shipping. In the meantime foreign classification societies, from large and extended experience, had so built up their staffs of advisers and surveyors, had so revised their rules and broadened their activities in all the phases relating to building, insuring and salvaging vessels, that the American shipowners found their interests best served by building under foreign classification rules. This tendency became so pronounced that, prior to the Shipping Board assuming control of the building facilities of this country, 96 per cent of the United States seagoing vessels was built under the rules of foreign classification societies. Therefore, in 1915 the American Bureau found it necessary to reorganize and to consider the advisability of making connection with a foreign registration society in order to enlarge its operations and usefulness.

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* Read at the twenty-ninth general meeting of the Society of Naval Architects and Marine Engineers, held in New York, November 17 and 18, 1921.

### Decline of American Shipping

Before entering further upon the history of the bureau, it may be well to allude briefly to some of the causes of decline of American shipping and its reaction upon shipbuilding in the United States.

First and foremost of the reasons was the withdrawal of the discriminatory duties enforced by the government in favor of American bottoms. This legislation had been so instrumental in building up the American marine that at one period American vessels carried by far the larger part of the world's commerce. Another cause of the downfall of the American merchant marine was the entering into of treaties which, to say the least, placed American shipping at a decided disadvantage with the carriers of other nations. The result was that little interest was taken by Congress in furthering the interests of the shipping of the United States from before the Civil War until the beginning of the great war, the only aid extended being in the shape of mail-carrying subsidies. The shipbuilding interests naturally followed the decline in shipping. The good effect of discriminating duties in the past may well be closely studied in connection with the enforcement of recent legislation. Another feature was the development of internal transportation facilities which greatly influenced and held in financial subjection the natural development of the United States as a shipping power.

This influence is to be found in the rapid construction of the railway system of this country. We have a tremendous area whose development depended upon means of communication one part with the other. This led to the building of great transcontinental railways, as well as lines connecting the northern and southern portions of our country. This and other necessary internal developments absorbed the financial energies of the country, and, while vast sums of money were raised and expended in the building of great railways, shipping, being of greater risk and its future to a great degree dependent upon congressional action, was not looked upon with favor as an investment nor given the consideration its importance demanded by the financial powers of the country.

### Reorganization

By the year 1915, or the second year of the great war, shipbuilding in the United States becoming much more active, the American Bureau of Shipping, through its board of managers, called a special meeting for the purpose of considering the reorganization of the bureau, of enlarging its usefulness by establishing faithful and accurate classification and register of mercantile shipping, and to aid in developing the merchant marine of the United States of America.

Looking to this end, a committee of reorganization was appointed at the meeting on October 8, 1915, consisting of P. A. S. Franklin, chairman, Antonio C. Pessano, Walter Wood Parsons, Charles Skentelberry, Harvey D. Goulder and William A. Dobson.

A number of meetings of this reorganization committee were held in the latter part of 1915 and the early part of 1916. At these meetings various maritime matters were discussed, including the renewal of negotiations contemplating an amalgamation of the bureau with Lloyd's Register of Shipping, as well as one with the Great Lakes Register. Ultimately it was determined not to make the contemplated arrangement with Lloyd's, but to continue the American Bureau of Shipping as a vital force in American shipping, it being the judgment of the committee that such course would be for the best interest of American shipowners, builders and underwriters, and from the fact that people in this country began to have a belated sense of national pride in the affairs of the merchant marine which called for the classification of American vessels by an American society and to desire insurance of American vessels and cargo by Americans for the benefit of America.

At the meeting January 13, 1916, Mr. Stephenson Taylor was invited to attend, and on the following day he was made chairman of the reorganization committee at the request of Chairman Franklin, who resigned the office for that purpose.

### Government Authority for Classification

Advance in connection with American shipping developed very rapidly from that date on, and congressional action, taken in connection with vessels owned by the United States, made it absolutely necessary that there should be an American Bureau of Classification, recognized as the authority for the proper classification of its vessels. It can be seen clearly that no foreign classification society, or an American committee of a foreign classification society, could be accepted as an authority under which the interests of the American government could be properly served. The recognition by Congress of the American Bureau of Shipping as the American authority placed it at once in an official position for the classification of government vessels and established it as a body capable of advising on kindred subjects; to this end, matters such as the determination of loadline and freeboard were referred by the government to the bureau for advice and co-operation in considering legislation for a government loadline for American vessels. It thus became necessary for the bureau to come at once into the field so largely occupied by foreign classification societies, fully equipped to assume the requirements and duties of an American classification society.

### Foreign Classification Societies

It must be recognized that the bureau had to contend with foreign registration societies, some over a century and a half old, whose growth had been marked by affiliation with insurance and salvaging companies which gave them a commanding position in maritime affairs. It must also be recognized that but five years had elapsed since the American Bureau of Shipping began to strengthen its forces and affiliations and to make a faithful and accurate classification of vessels and registry of mercantile shipping contributory to the development of the merchant marine of the United States of America.

The record as now compiled is a compendium of the general characteristics of the vessels admitted, in which are given the vessel's name and official number; the signal letters; the material of which the vessel is constructed; the number of bulkheads and decks; whether vessel is built with water bottom or not; whether fitted with wireless outfit and submarine signal apparatus; the hailing port; the registered dimensions; the gross and net tonnage; when built, and by whom; the owners; the particulars of engines, boilers and propellers and the class the vessel is given; so that by referring to the record the general information concerning any vessel is at once obtainable.

### Purchase of the Great Lakes Register

In this country alone is to be found a chain of great cities located on interconnecting inland seas of fresh water, where vessels up to 600 feet and over in length are common carriers. Seasonal storms of great violence occur throughout the area of the Great Lakes. but the waves, while steeper than ocean waves, are not so long. Therefore the stresses on the main structure are not as severe, but weather deck structure and fittings are required to withstand the pounding effect of seas breaking on deck. A type of Lake structure has thus developed that requires special treatment by the rules of a classification society.

To meet these requirements the Great Lakes Register was purchased in 1916 from its owners and incorporated with the bureau as the Great Lakes Department.

### Alliance with British Corporation

In the year 1917 the bureau was convinced that the rules adopted by the British Corporation for the survey and registration of shipping were the most scientific of the rules in force for the construction of steel vessels, and after conference with said corporation an alliance was made whereby the British Corporation represents the bureau in the United Kingdom, and the bureau represents the British Corporation in the United States, on terms mutually satisfactory.

### Alliance with Italian and Japanese Societies

Following this alliance in 1917, one of the same nature was made with the Registro Navale Italiano, and in 1920 one with the Imperial Japanese Marine Corporation. It will thus be seen that working arrangements have been made by the American Bureau of Shipping with the British Corporation, the Registro Navale Italiano and the Imperial Japanese Marine Corporation, by which each society represents the others in its home country. In the Japanese corporation, Mr. Fred F. Perris, long with the British Corporation, serves as technical adviser of the Japanese corporation. Prince Higasji Fushimi is honorary president, and Dr. Seichi Terano, of the Engineering College, Imperial University, Tokyo, is vice-chairman. The head offices are in Tokyo, and surveyors will be established in Yokohama, Kobe, Nagasaki and Osaka.

### Surveyors Placed Abroad

At the present time it can be said that all these alliances have been very satisfactory. During the past year offices and exclusive surveyors have been placed in Hamburg, Antwerp, Havre, Brest, Bordeaux, Rio de Janeiro, Buenos Aires and Valparaiso, and additional non-exclusive surveyors in Spain, Portugal and all important Mediterranean ports, including Constantinople.

### Action of the Atlantic Coast Shipbuilding Association

The registration of American vessels by an American society has been considered so important that the Atlantic Coast Shipbuilders' Association, representing all the shipyards on the Atlantic Coast, appointed a committee to co-operate with the American Bureau of Shipping in extending its efficiency in every way possible.

The following statements, made by the bureau in response to suggestions of that committee, are quoted from the committee's annual report to the Shipbuilders' Association:

"In general the several suggestions which you sent us related to improving the efficiency of our surveyors wherever possible, the 'handling with greater speed of the review and criticism of plans in our New York office, and the possible granting of larger salaries to surveyors in order to secure the best talent.'

"To all of these matters we have given most careful attention with a view of remedying conditions along those lines wherever possible so to do.

"As you well know, the shipbuilding business has undergone a great slump since your letter was received. This has necessitated the discharge of a number of our surveyors, and we have endeavored to retain the most competent. The lull has relieved the pressure in our technical branch at the New York office, and we feel quite sure that there can now be no just complaint concerning the celerity with which we handle all plans submitted.

"We wish to assure your committee that we will welcome any further suggestions it may care to make and that we are continuing our endeavors constantly to keep up our standards and improve our efficiency in every way feasible."

From this it will be seen that the bureau is working in full harmony with the shipbuilders of this country and is rapidly gaining the confidence of shipowners, builders and underwriters.

### General Outlook

One of the most important features of a classification society is that its surveyors shall be men in whom the shipowner, the shipbuilder and underwriter have confidence as to their experience, judgment and technical knowledge. From the above report it is apparent that the bureau, by the process of selection and elimination, is acquiring a staff with the desired qualifications.

The technical committee of the bureau is headed by no less an authority on hull construction than Admiral D. W. Taylor, United States Navy, than whom no expert speaks with greater weight on matters of construction and design. There is much to be accomplished by the bureau in strengthening its forces and making affiliations for appraisal of damages and salvaging, but the record of the past five years argues well that these matters will be fully and ably dealt with. It has been well said by Mr. Walter B. Norris that "though the western frontier is gone, and with the historic incitements of democratic character which it offered, the sea remains with its majesty, its independence and its call to imagination and courage, to keep alive the democracy and idealism which it helped to create in the typical American."

The typical American is returning to love of the sea and the opportunities it affords for advancement and accumulation of wealth. The American Bureau of Shipping has awakened to its opportunities and is strengthening its forces and enlarging its borders to meet the revival of interest in the merchant marine of the United States.

There can be no doubt that it is the patriotic duty of American shipowners, underwriters and builders to aid and encourage the bureau in its efforts to build up an organization which, with its affiliations, shall be second to none in the world in the service rendered in classing, surveying, appraising, underwriting and salvaging vessels owned by the shipping interests of this country. If we are to have a prosperous growing merchant marine, we must also have an American classification society, capable of rendering aid of the best class to every phase of the shipping industry.

# THE UNITED STATES HYDROGRAPHIC OFFICE

THE world's trans-oceanic trade, with all its momentous interests, its freight of human lives and its exchange of world commodities, its naval activities, its fabulous sums of money invested, is dependent upon a few vital factors, and one of these factors is made up of the combined activities and responsibilities of the British, United States and French hydrographic offices. These are the "big three" among the hydrographic offices of the world. The German marine has always depended largely upon the British office, and the Spanish, Italian, Dutch, Norwegian and other shipping have had to depend upon charts foreign to these nationalities. And today, whether the world's nautical interests are safeguarded lies largely with these three offices.

The British hydrographic surveying and charting force is the largest of these three and today they have on issue 3550 different charts covering the world; the French, with a very fine body of technical men, come next with 2830 charts; and the United States Hydrographic Office (with an inadequate force, underpaid for years, through strenuous effort and fine endeavor) is issuing about 2600 different charts today.

The Hydrographic Office, beginning in 1830, in an exceedingly humble way, and then designated as the "Depot of Charts and Instruments," began to be known as the "Hydrographical Office" in 1842, and in 1866 it was given, as the "Hydrographic Office," full and wide authority to furnish accurate charts to the navy and to the mercantile marine.

The history of the Hydrographic Office from the beginning is closely linked with memorable events in the nautical world, of the greatest importance to navigation. The famous Wilkes Expedition in 1838 opened up the Pacific Ocean, and especially the Samoan and Fijian regions, to trade, commerce and knowledge, in a way that world cartographers still admire and write about. This expedition gave us 87 engraved charts as the result of its surveys, and several of these are still published by the office. Commodore Perry in Japanese waters in 1852-55 gave the world its first hydrographic knowledge of certain waters in that region. The scientist, navigator and meteorologist, Maury, from 1844 to 1861, with his wind, current and track charts, helped to place the Hydrographic Office high in the minds of hydrographers and cartographers of the world. The Isthmus of Darien Survey Expedition of 1870, precursor of all Central American inter-oceanic canal surveys; the Nicaraguan Survey Expedition of 1885; the survey of Lower California, of Mexico's west coast, of the west coast of Central America, and of the principal bays and ports thereon; of Honolulu and other harbors in Hawaii; of Guam and American Samoa, are among the hydrographic events of the Navy in general or of the Hydrographic Office in particular; and to these should be added the later surveying expeditions of the Orinoco River, the coasts and harbors of Cuba, Haiti, Dominican Republic, Nicaragua and Panama.

Among the most important worldwide events of the century from a cartographic standpoint were the operations, under the auspices of the Hydrographic Office and the Navy Department, of the so-called "longitude expeditions" between 1881 and 1904, with Green, Norris, Laird, Davis and others as officers in charge, which furnish the chart world about 40 secondary meridians in the West Indies, Mexico, Central and South America, China, Japan, Siberia, the East Indies, the Philippines, and Europe, all connected accurately with the meridian of Greenwich, and which are today largely the basis for correct geographic positions in all these regions. Then the Cuban Longitude Expedition of 1911-12 is the latest of those fostered by the office, and this party gave us the geographic positions of 21 points around the coasts of that island.

It can properly be said that the Hydrographic Office has contributed in a large way to the world's knowledge of navigable waters and nautical data, and especially along some lines has done its full share of the world's work. Along other lines there is undoubtedly a need for development, and this can and will come through a larger force and more adequate pay.

The United States Coast and Geodetic Survey, by law, is confined in its hydrographic activities to the surveying and charting of the coasts of the United States and its colonies, and with the aid of a fine corps of technical men has covered these coasts and their harbors with some 700 charts. By law, the Hydrographic Office is confined to and given the coasts and the waters of the rest of the world, and through the combined efforts of its technical men and its different executives, is publishing and issuing some 2600 different charts today. Measured by any standard, these two government offices have done well, and as compared with the great French and British Hydrographic Offices, the United States Hydrographic Office, considing its inadequate force, measures well up from the standpoint of quality and quantity of production.

It can be truly said of every Hydrographic Office chart prepared and constructed that, if possible, the world is searched and sifted for information relating to it and is made to contribute toward its representation of data. The men are highly trained technical employes, experts in their line, probably with not their superior in the world; some of them college graduates of long training and varied experience, and others among them of valuable experience in the field and in the office. The fact that they are in a non-competitive profession, i. e., that they have no counterpart outside of the government service and nothing but a government office could adequately use their talents, we believe should in no way militate against them as a class when it comes to salary classification.

Cartography, or chart making, is so different from ordinary map making that there can be no precise and adequate analogy drawn between them. It is even different from careful map making. In chart making the utmost care is used in laying down the particular projection (i. e., the latitude and longitude grid thrown over and enveloping the chart) best fitted to the chart, and even the precise distortion of the paper computed; the mathematical elements of the survey computed and adjusted, and the difficult points closely and accurately checked up; tidal elements computed; soundings reduced to some standard datum and then plotted; longitude investigations made and all authorities compared with one another; systems of foreign nomenclature studied, revised and even originated; translations of foreign books, documents and surveys; lighthouses, buoys, beacons, shoals, dangerous rocks, and any feature likely to be used as a day-mark by a navigator, undergo special scrutiny and care in plotting, correcting and bringing charts up to date by means of data secured daily from all parts of the world; and lastly, conflicting data from far parts of the world, where it is not possible to send a survey party, are compared, criticised, sifted and finally used in such a manner as to safeguard shipping, so that sound individual judgment in such cases is largely the real independence of the ship against possible disaster to herself and to her human cargo. The cartographer in the Hydrographic Office performs all these investigations and makes all these computations, revised and assisted by his immediate superiors.

The output of the Hydrographic Office has increased 600 per cent within the past three years, and the force has increased also to some extent during this period. Lately, however, and more so than ever, the office is losing men steadily on account of insufficient pay; out of a total force of fifty cartographers and copyists fourteen have left since January 1, or a percentage loss within less than a year of 28 per cent, and only by exceedingly strenuous efforts on the part of those remaining, aided, it is true, to some extent by the new, yet raw appointees, has the office been able to accomplish what it has. What cannot be said of all branches of the government is that the office is partly self-supporting through its sales of charts and books, and the charts sold in 1918 (the last official year) amounted to 109,000 copies.

# BOOK REVIEWS

**Trading With Asia,** by Frank R. Eldridge, Jr., 460 pages, with maps and numerous tables of data, bound in blue pressboard with gold stampings. Published by D. Appleton and Company, New York. Price, $3.50 net.

Frank R. Eldridge, Jr., is chief of the Far Eastern Division of the United States Bureau of Foreign and Domestic Commerce and lecturer on Far Eastern economics in the School of Foreign Service, Georgetown University.

In this volume he has given America a well thought out, compact handbook on Far Eastern trade. It is especially designed for the student, but will be found very useful by the American business man who desires to get a groundwork for his approach to the problems of marketing in the Orient.

This book forms a practical estimate of the potentialities of the Asiatic markets for American traders. It surveys the economic and political conditions in Asia and describes in detail Asiatic products and resources. The author is an authority in intimate touch with the conditions described, and he has succeeded in presenting an invaluable picture of a market which, through racial differences, is perhaps the most difficult for the American business man to conquer. The volume is conveniently divided into geographic parts: Japan and China; The Philippines and the Dutch East Indies; British India and Ceylon; and Siam, Malaysia and French Indo-China. Each country is introduced by a brief sketch of its history under foreign intercourse and its government and political conditions. Tariffs, commercial treaties, commercial laws are next covered, and the agricultural, mining and manufacturing industries treated in detail. For each country the commercial methods and the market for American exports are analyzed. A concluding chapter summarizes the commercial possibilities of the Far East.

**Marine Diesel Engine and Semi- Diesel Engine Operation and Management,** by Harold Atkinson. Fifty pages, illustrated with numerous diagrams. Published by E. and F. N. Spon, London.

This is a practical handbook comprising simple directions for the control and management of fuel supply, overhauling of machinery, lubrication, air starting systems, air compressors, and auxiliaries, and largely embodies the practice in these regards of Vickers Naval Construction Works.

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**The Causes of Detonation in Internal Combustion Engines,** by H. T. Tisard. Sixty-five pages, 12 illustrations, 9 tables of data. Published by E. and F. N. Spon, London.

The subject matter of this book includes a paper on the subject read before the Northeast Coast Institution of Engineers and Shipbuilders, the discussion on that paper by members of the institution, and the reply to the discussion by the author. The paper describes a special test apparatus devised by the author and experiments carried out by him with this apparatus in testing explosions in various gases as those explosions took place in an engine cylinder. The experiments were carried out over a wide range of varying conditions, and some very valuable results were obtained. This book should be of great interest to designers of internal combustion engines.

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**Diesel Engines, Stationary and Marine,** by A. H. Goldingham. 240 pages, 140 illustrations, with numerous tables. Bound in blue pressboard with gold stampings. Published by Spon and Chamberlain, New York. Price, $3.

This is a second edition of the author's standard work on this subject, revised and enlarged to include a number of later designs and having appended a treatise on Diesel engine castings reprinted from a paper by F. J. Cook read before the Northeast Coast Institution of Engineers and Shipbuilders in January, 1920.

The book describes and discusses the design and details of construction of all the principal types and makes of internal combustion heavy oil engines, both 2- and 4-cycle. It has numerous insert drawings showing the general arrangement of many engines, characteristic indicator diagrams, and sketches to scale of working detail. It is a compact volume, thoroughly indexed, clearly printed on a good quality of paper, and should be a very welcome addition to the library of every marine engineer.

# SEA TALES

**Wild Blood,** by Gordon Young.

A tale of a voyage in an outlaw schooner from Australia to Samoa and thence to Dakaru, in which the hero, Hurricane Williams, a sort of South Sea nautical Robin Hood, with a price on his head, shanghais a crew of hardshell pirates, holds them in subjection by sheer strength of personality and muscle, outwits and finally wrecks a German gunboat, and through a series of thrilling adventures, storms, cannibals and traitorous friends, finally wins out to the consummation of his purpose, and disappears over the southern horizon, his schooner's spars outlined against " a great full moon red as if it had been splashed with blood."

Published by the Bobbs - Merrill Company, Indianapolis. Price, $1.50 net.

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**Lost Ships on Lonely Seas,** by Ralph D. Paine.

Here is a plain, unvarnished tale of many long forgotten episodes, both naval and commercial, concerning the age-long conflict of man with the sea. It might have been called "A Tale of Great Hearts and Little Ships" and is concerned entirely with life at sea before the days of steam and steel. The publisher and the author are to be congratulated in that the book, both through its makeup and its presentation of ideas, conveys a very decided sense of authenticity. Evidently there has been much searching of ancient records, old sea journals, log books, and official papers. The result is such a book as will bear reading and rereading, a good companion for winter nights before an open fire.

Four hundred and twelve pages, 16 illustrations. The Century Company, New York. Price, $4.

# THE BLOW-OFF COCK

## AN ANSWER TO THE "FIRST"

By SEA FLAME

"FIRST ASST." in the December number of Pacific Marine Review takes exceptions to Sea Flame's notions. Some of his points are well taken; others, the writer submits, are not. Sea Flame still maintains that there is a "type" of seafarer. If he does not become a "type" he will not become a good man, either on deck or below. "First Asst." says there are three types. Does he mean good, middling and bad? He also claims my animadversions on the many auxiliaries on the freighter de luxe are all wrong. I still maintain that their upkeep in most cases exceeds their worth, on freighters. It would not be considered good business to carry freight on a railroad in Pullman cars or to use a Packard twin-six for a delivery wagon.

"First Asst." caustically alludes to Sea Flame as being one hundred years behind the times and wonders if the "Chief" has any knowledge of refrigeration, dynamos, superheaters (not "supperheaters"), etc. However, whatever the knowledge of Sea Flame regarding these units is beside the issue. Suffice it to say that over a period covering the past many years, nearly ever since refrigeration, electricity, turbines and superheaters have been used on shipboard, he has handled them, and records will show that he kept them functioning, too. However, this is not a personal argument, so will strive to show why it does not pay to have the "contraptions" on a freighter.

It is known that a well insulated ice box will keep meat sweet for easily 80 days with 20 tons of ice. Compare this with the overhead of a refrigeration plant, and two are needed, as accidents will happen.

Regarding superheaters, there are many arguments for and against them. For turbine jobs they are ideal under proper conditions. The conditions, however, are not always ideal. When boilers get dirty, or slightly salty, the efficiency of the superheater drops rapidly. The same loss happens when the boilers are working with the vessel in a heavy sea. Water is bound to come over. Again must the first cost and overhead be considered, and it is a matter of record that many of the operators of steamers are doing away with superheaters, except in certain cases.

"First Asst." says he would like to have running water in his room. No doubt about it being a great convenience, but does it pay? The same may be said regarding porcelain baths, nickeled fittings, hot and cold showers, etc. The facts are that "First Asst.", like many others, has not given thought to the first cost and overhead of these luxuries.

Our mutual friend, Mr. Winthrop L. Marvin, tells us in his paper read before the Society of Naval Architects and Marine Engineers of the construction cost handicap on American ships. The reason is obvious. If we will build a steamer in an American yard under normal conditions and fitted as many foreign freighters are, we can, I believe, lessen this handicap materially and also operating costs. The fact that hardly any American freighters are at present making expenses and that Japanese and other foreigners are carrying freight from and to American ports shows that the inevitable balance between profit and loss is one of the prime factors of business.

Sea Flame quite agrees with "First Asst." as regards "too much mixing between officers and crew." However, that condition was largely due to the amalgamation of marine unions and the entangling alliance of the American Federation of Labor. Indications seem to show that that evil is now of the past.

As a last suggestion, let "First Asst." and others try to understand better the need of economy in all lines—better production, less selfishness, a desire to return for a dollar's wage one hundred cents worth of service—and the world will be better. Perhaps the dream of "First Asst." of being chief of the largest ship in the world flying the American flag, as well as making a profit, may then be realized.

# THE PORT OF HOUSTON

By B. C. ALLIN, Director of the Port

IT has only been within the last two years that the port of Houston, a land-locked harbor located fifty miles inland from Galveston, has come to the attention of the shipping interests at large as a world port.

### The Channel

In 1899 a government project for a 25-foot depth was adopted and the work started in 1903, dredging to 18½ feet. After various delays a committee of citizens from Houston in 1910 went to Washington and offered to pay half the cost of a 25-foot channel. This resulted in the start of work on a 25-foot depth and its completion in 1914 at a cost of $2,500,000. The result was the present channel, which is fifty miles long, starting from Galveston Bar and ending at the turning basin in Houston. It was dredged the entire distance, half of which lies across the open waters of Galveston Bay. The bottom width through Galveston Bay was made 150 feet and for the upper or inland section 100 feet. There is no rock on the channel, the banks and bottom being clay throughout. The section through Galveston Bay is well lighted, and the entire channel is well marked with spar buoys. At the present time the government is deepening this channel to a projected depth of 30 feet and about one-half of the length of the channel has been completed to the new depth. The bottom width across Galveston Bay will be 250 feet and for the remainder will be 150 feet, the new project providing for the straightening of a number of curves. This new work is in part paid for by the local interests, the people of Houston having contributed to it almost $1,500,000.

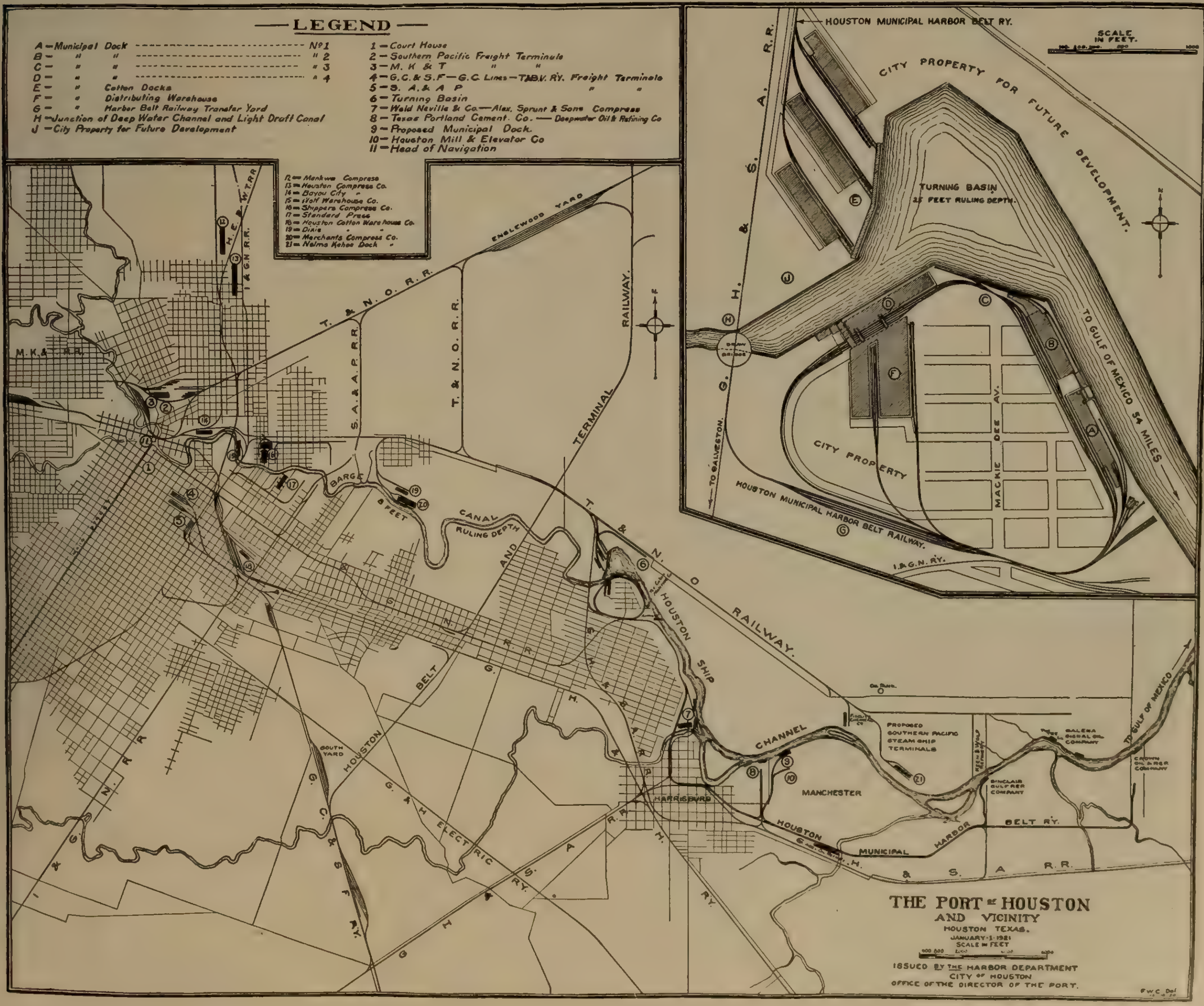
### Industrial Sites

The upper twenty-five miles of this channel lies through land of great value for industrial sites and in the last few years a large number of industries have located on either side.

The Humble Oil & Refining Company has a refinery tract of almost 1200 acres, with its own private wharves, and is operating the units of its refinery already completed. This refinery when constructed as provided in the ultimate plans will be one of the largest refineries in the United States.

The Galena Signal Oil Company and the Sinclair Oil Company each have large refineries operated with their own private wharves serving them. Among other interests which have located on the banks of this channel are:

The Tex-Cuban Molasses Company.



The Texas Chemical Company.
The Magnolia Petroleum Company.
The Houston Mill & Elevator Company.
The Crown Oil & Refining Company.
The La Porte Oil & Refining Company.
The Fidelity Chemical Company.
The Keen & Wolfe Refining Company.
The Armour Fertilizer Company.
The Deepwater Oil Refineries.
The Texas Portland Cement Company.
The Gulf Pipe Line Company.
The Texas Company.

There are many others besides these, notable among them being a number of cotton compresses, the majority of which are located in the city of Houston proper on the upper or light draft channel connecting the city with the turning basin.

### The Turning Basin

At the upper end of the deep water channel lies the turning basin with a diameter of 1100 feet, adjacent to which are located the municipal wharves of the city of Houston. There are entering Houston seventeen railway lines and the immediate connection to the wharves is furnished by the Houston Municipal Harbor Belt Railroad, which at the present time is being operated by certain trunk line railroads for the city. The municipal wharves can accommodate nine vessels at a time, and plans are now under way for the enlarging of two wharves and the construction of another one, all of which work will be completed within the next six months.

The operation of the port at Houston is conducted under the city administration, which acts upon recommendation of a harbor board of five members, the executive officer being the director of the port.

### Shipping at Houston

At the time of the signing of the armistice Houston had not made its start as a port, the only shipping at that time using municipal wharves being the Southern Steamship Company, which maintained a small service south-bound from Philadelphia. Within the last two years the operation of the port has been put on an active basis, with the result that transportation service and available cargo have been brought together and steamship service secured from Houston to the ports most logical for her business. There are now operating through the port of Houston numerous steamship companies, among which are the following:

Daniel Ripley & Company operate from Houston to France and Germany.

The Leyland Line operate to Liverpool.

The Harrison Line operate to Liverpool.

Blakely Smith & Company operate to Mexico, West Indies and Cuba, in connection with the United Steamship Company.

Lykes Brothers operate to West Indies and Cuba.

Swayne & Hoyt operate from the Pacific Coast direct to Houston.

Southern Steamship Company operate to Philadelphia.

There are also numerous other sailings of irregular or special nature which continually bring business to the port of Houston, as, for example, at the present writing a cargo of coffee from Santos, Brazil, is being unloaded at the wharves.

### Freight Handled

Considering the fact that the port of Houston is only two years of age, its business is remarkable, as will be seen from its showing for the first ten months of this year during a period of general depression in shipping circles throughout the world. During this time there arrived and departed 213 vessels. There were imported 149,429 and exported 222,745 tons of freight, making a total import and export business of 372,274 tons with a value of over $31,000,000.

In addition there was a coastwise movement of 429,926 tons with a value of over $13,000,000, giving a total figure for the cargo handling during these ten months of over 800,000 tons, which, as above stated, is remarkable for a port two years old under present shipping conditions.

A large portion of the export cargo outside of oil from the refineries consists of cotton, and Houston in this commodity stepped from nothing to the fourth exporting port in the United States in its first season. During the above-mentioned period of the first ten months of this year there were shipped from the port of Houston a total of 311,028 bales of cotton.

Of special interest to the Pacific Coast is the recently inaugurated service of Swayne & Hoyt between Seattle, San Francisco, San Pedro and Houston. Houston by virtue of its location and rail connections is the natural distributing center west of New Orleans, and serves a large inland territory. In the past there never has been a regular steamship service between the Pacific ports and Texas, with the result that the food products originating in Washington, Oregon and California have been almost entirely shipped by rail. At the present writing a vessel is leaving the Pacific Coast for Houston, which when it arrives in Houston will have 1000 tons of foodstuffs on it consigned to Houston grocers alone.

The lumber interests are interested in the service, and only last August the first cargo of red cedar shingles brought to Texas arrived in Houston on a vessel of this service, having been shipped from Everett, Washington.

### Wharf Facilities

Wharfage facilities at the turning basin are as follows:

Wharf No. 1—1647 feet long, creosoted pile construction, containing a concrete warehouse 100 by 425 feet in size, as well as two ironclad sheds. Two railroad tracks reach the ship side; one inclined conveyor for freight from ship to shed. This wharf is for miscellaneous cargo.

Wharf No. 2—522 feet long, concrete construction, containing open shed 105 by 483 feet in size. One railroad track reaches the ship side. This wharf is also used for miscellaneous cargo.

Wharf No. 3—799 feet long, concrete construction, for open storage and railroad connections. Two railroad tracks reach the ship side. On the east end of this shed there is a galvanized iron transit shed with approximately 15,140 square feet of storage area.

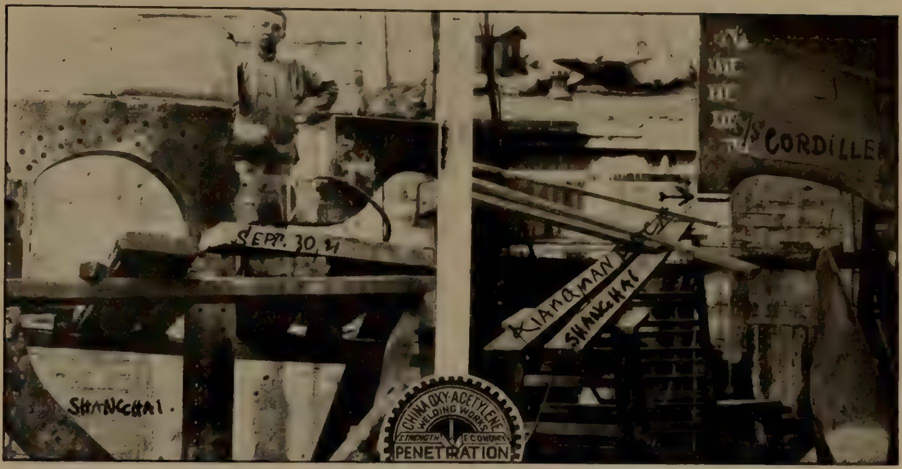
Wharf No. 4—777 feet long, concrete construction, containing a concrete transit shed 662 by 100 feet in size. There are five inclined conveyors here from ship to shed. No railroad tracks reach the ship side, but behind the shed are five tracks spanned by a 20-ton electric traveling crane and two trucking bridges connecting the transit shed with a concrete warehouse 600 by 400 feet in size, U shaped, served with three railroad tracks between the wings and two on the east side. This wharf and warehouse are designed for general merchandise.

Wharf No. 5—104 feet long, designed for barge traffic.

Cotton Wharf—This is 800 feet in length, having in the rear three concentration sheds, each 650 by 120 feet, equipped with Fordyce monorail trolley system, connecting them with the ship side. Storage capacity, 50,000 bales.

Main Street Wharf—573 feet long, designed for barge and light draft traffic. Located on the upper channel, seven miles from the turning basin and deep water channel.

# OXY-ACETYLENE IN CHINA



THAT China, a country whose worship of antiquity has retarded its own development and progress until comparatively recently, is at last awakening to ideas and activities of the fast moving world beyond her domains is evident in many ways. One of these that is typical of her new-found modernism is the adoption of oxy-acetylene welding and cutting.

The photographs reproduced herewith were secured through the courtesy of the export department of the Oxweld Acetylene Company. They show interesting work done by the Oxy-Acetylene Welding Works at Shanghai. A rudder frame of the French steamship Cordillere was broken, and the ruptured section (9 by 5 inches) was repaired by welding in four hours. The location of the weld is shown by crossed chalk lines in the photograph at the left. Another weld (on the stern post) is indicated by the arrow in the picture on the right. The work was done by Chinese labor, the operator being shown in the print at the left.

It is stated that the process is becoming more widely understood in the Orient. These Chinese are natural mechanics, and it is said that they easily master the manipulation of the blowpipe and are keenly interested in acquiring a knowledge of approved practices and applications.

# ANOTHER AUXILIARY SCHOONER

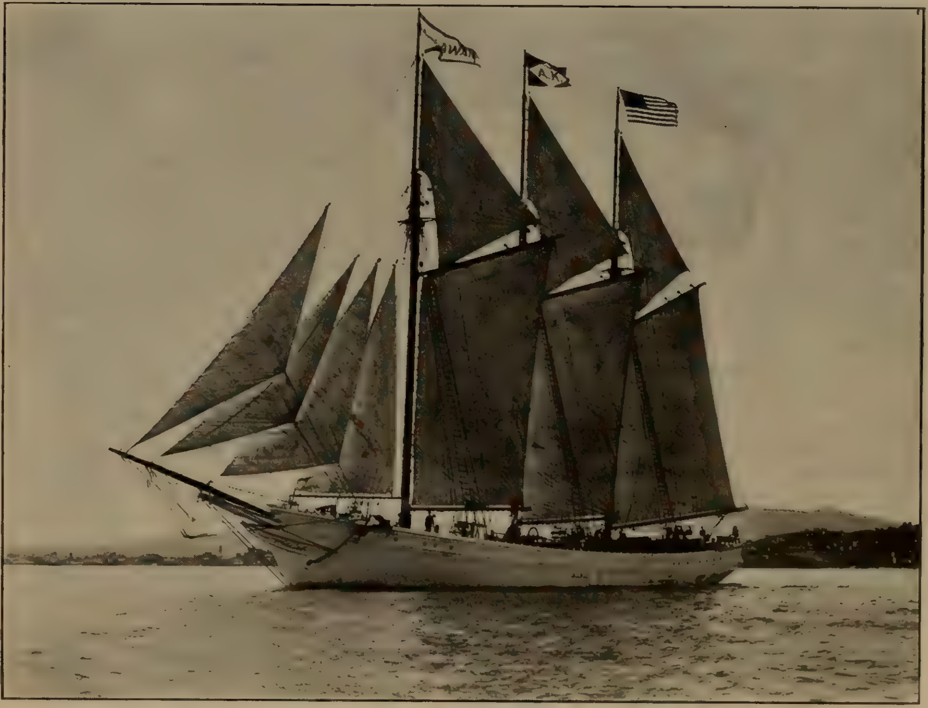
Our illustration shows the beautiful wooden auxiliary schooner Palawan built at the yard of W. F. Stone & Son, Oakland, in 1918, for Atkins, Kroll & Company.

This vessel, especially designed for South Sea trading, was fitted with Union gas engines of sufficient power to give her a cruising speed without wind of 7 to 8 knots an hour.

She was used very successfully by Atkins, Kroll and Company in their South Sea Island copra operations, and together with the balance of their fleet was sold in 1919. The Palawan went to Finnish owners. Her home port is now at Helsingfors, and her builder's name, according to Lloyd's Register, now appears as Renck Stone.

She is 167.5 feet long, 38.8 feet beam, and 20.4 feet molded depth, of the one-deck type with a beautifully modeled underbody and ample sail power. Her tonnage measurements are 818 gross and 637 net.

What a pity that the American flag should lose this beautiful example of the wood shipbuilder's art and still keep so many of the wooden abortions that were produced during the war period.



The yard of W. F. (Renck) Stone has supplied many of the finest trading schooners for the islands of the South Pacific and has built a number of very fine tugs and yachts. Among them all the Palawan stands out as a graceful, staunch, seaworthy craft easily handled, a swift sailer, and a good sea boat in all kinds of weather.

# FULL SPEED AHEAD

EDITED BY ANDREW FARRELL

## Steamship Operations

**Full Speed Ahead: Steamship Operations, 74; With the Exporters and Importers, 78; Marine Insurance, 81; In the Shipyards, 86; Personals, 91.**

### Los Angeles-Honolulu Service

Plans for establishing a direct steamship service between Los Angeles and Hawaii, which had been developing for several weeks, matured December 1 in an announcement by the Shipping Board that the steamers Aeolus and Huron, hitherto operated by the Munson Line in the South American trade, would be assigned to the Los Angeles Steamship Company and delivered early in 1922. The establishing of this service realizes a long-held hope of Los Angeles, for the city always has desired a direct freight and passenger service to and from Honolulu, but except for a relatively few sailings by the Great Northern and Northern Pacific in 1915 and 1916 never has attained its wish.

**Former German Vessels**

The Aeolus and Huron are 15-knot oil-burning vessels, originally in the Atlantic service between Bremen and New York and then known as Grosser Kurfurst and Friedrich der Grosse. When America entered the war the ships were seized by the United States government and placed in transport service. After carrying a large number of troops during many trips to France, they were reconditioned and equipped at East Coast yards for the South American service. The Aeolus is 560 feet long between perpendiculars and the Huron is 528 feet. Each has capacity for about 400 passengers.

**Changes to be Made**

Certain changes and improvements planned for these vessels by the Los Angeles Steamship Company will be made upon them upon their arrival at Los Angeles harbor, but it is understood that, as they were recently reconditioned and decorated and furnished, the contemplated re-equipment and alterations will not take long, so that the new service to Honolulu is expected to be started in the spring.

Following the launching of the steamship West Chopaka at the yard of the Los Angeles Shipbuilding & Drydock Company, the guests at the launching were taken on a cruise on the steamship Harvard. During that voyage plans for a Honolulu service were discussed and Erle M. Leaf, vice-president of the shipbuilding company, was dispatched to Washington to obtain vessels. His errand was successful.

### Those Railroad Contracts

In view of the developments of the last few months, little doubt exists that Congress or the Shipping Board will compel the abrogation of preferential traffic agreements between foreign steamship companies and railroads of the United States. One club proposed by Senator Ransdell, to deny payments under the railroad refunding bill to companies having such contracts, would be immediately efficacious, for signs are not lacking that the railroads are interested in the enactment of the refunding measure. Such drastic action may not, however, be necessary, inasmuch as most of the companies concerned have manifested a willingness to cancel the contracts. This attitude was brought out at a conference between the Shipping Board and railroad officials December 1.

At that meeting the Baltimore & Ohio reported that its contract with the North German Lloyd had expired; so had the contract of the Atlanta, Birmingham & Atlantic with Strachan Brothers. The following companies were ready to cancel if so directed by the board: Grand Trunk with White Star-Dominion, Southern Railway with Mobile Liners, Mobile & Ohio with Mobile Liners, Boston & Albany with Cunard and Leyland, Baltimore & Ohio with Donaldson, Furness-Withy and Scandinavian-American; Pennsylvania with I. M. M.

**Westerners Are Obdurate**

Western railroads, however, were inclined to stand their ground. The Great Northern on October 18 renewed a contract with the Nippon Yusen Kaisha, and the Chicago, Milwaukee & St. Paul has a tacit agreement with the Osaka Shosen Kaisha, practically equivalent to the old, elapsed contract. R. M. Calkins, vice-president of the St. Paul, was unwilling to recommend to his road the cancellation of the contract until the Shipping Board could guarantee replacement of the business that would be lost.

Whatever one may think of the ethics or good sense of such agreements as these, no particular good will result from the tactics pursued by some individuals, who would make it appear that a deep-laid, nefarious plot is afoot to strangle the American merchant marine in its cradle. The fact is, as every child of the Puget Sound country knows, that for years the Japanese lines have had contracts with the northern transcontinental railroads, and that the agreements were executed in days when the United States flag scarcely was seen in foreign commerce out of Tacoma or Seattle. With the exception of the steamship Minnesota, what American liner was plying out of Seattle to the Orient at the outbreak of the war? How long did the Minnesota remain after war began? What became of the "Big Four" of the Pacific Mail, which made up the largest United States tonnage engaged in trans-Pacific trade? Gentlemen who ignore these facts, whether on the floor of the United States Senate or elsewhere, are likely to have their motives questioned.

**O. S. K. Contract Dated 1908**

As was admitted in the Senate, the Chicago, Milwaukee & St. Paul-Osaka Shosen Kaisha contract was executed in 1908. It ran until April 1, 1919. In anticipation of the lapse of the contract, Mr. Calkins on behalf of the St. Paul wrote under date of June 13, 1918: "There is no intention on the part of this company to cancel this contract. In fact, we hope that it may continue in force and that the friendly relations which have been maintained for the past ten years between our companies will continue indefinitely. Due to the present Federal administration of American railways, it is not advisable — and I doubt very much whether it would be possible — for us to enter into a formal renewal of this contract. . . ." This, it would appear to any unprejudiced reader, is precisely the language that a suave business man would employ in addressing a valued customer or trade-ally.

If, however, the question be approached with an open mind, free from preconceived notions, the fact does appear that the railroad-steamship contracts are potentially and actually detrimental to the American merchant marine. A statement of the National Merchant Marine Association, inserted by Senator Jones of Washington in the Congressional Record, shows that the following tonnages were delivered and received during 1920 by American railroads parties to contracts with the steamship lines:

| | Net Tons Received | Net Tons Delivered |
|---|---|---|
| Pennsylvania | 61,692 | 234,261 |
| Boston & Albany | 60,091 | 237,073 |
| Baltimore & Ohio | 88,113 | 227,961 |
| Phila. & Reading | 54,111 | 233,642 |
| Boston & Maine | 211,404 | 258,061 |
| Grand Trunk | 16,839 | 645,710 |
| Norfolk & West'n | 174 | 19,473 |
| Atlanta, Birmingham & Atlantic | 8,064 | 22,126 |
| Missouri Pacific | 1,639 | 10,476 |
| Chicago, Milwaukee & St. Paul | 99,416 | 110,300 |
| Totals | 601,543 | 1,999,083 |

The omission of the Great Northern, which has a contract with the Nippon Yusen Kaisha, is rather singular.

### Some Unusual Features

Some features of the agreements filed with the Interstate Commerce Commission indicate that the railroads have made startling concessions. Among features of different contracts are: free wharfage, dockage, use of warehouses, etc.; special piers set aside by the railroads; exclusive use of facilities without charge; reduced rates; special demurrage agreements; pledges to work together against competitors; railroads pledge themselves to deliver freight, so far as possible, to specified steamship lines; railroads agree to seek exemptions for steamships from port, pilotage and lighthouse dues and local taxes; railroads agree to make all reasonable efforts to obtain freight required by steamers; coal to be supplied at less than market rates, which are not to exceed $5 a ton in any case; preference to be given by railroads to freight tendered by steamships.

An architect's drawing of the building that the Matson Navigation Company will erect immediately at Main and Market streets, San Francisco. It will be a fifteen-story, Class A, steel-frame structure with concrete floors. The exterior will be ivory-colored terra cotta. On the first floor will be all Matson offices, and on other floors the offices of all, or practically all, Hawaiian companies, sugar plantations, pineapple-packers, coffee-growers, etc., that are represented in San Francisco. The building will be L-shaped.

Such concessions as these appear to be due to the freight-hunger of the railroads. Extreme though some of them may be, they are not inexplicable when one considers that the O. S. K. and N. Y. K., for example, were in extremely strong situations in the Puget Sound - Orient trade prior to the war; still are of great weight, for that matter, although their relative importance has declined since the entrance of Shipping Board tonnage. But the N. Y. K. has been a most important factor since its vessels appeared in Puget Sound in 1896 at the solicitation, it is said, of James J. Hill. During twenty-five years it carried more than 2,500,000 tons of imports and 3,000,000 of exports, both of which are noteworthy volumes of freight for both the N. Y. K. and its allies, and railroad officials who did not regard such tonnage covetously would be more than human. But since 1896 there are more ocean-going vessels afloat, with consequent keener competition, and conceivably the domestic business of the transcontinental lines has increased, both tending to make the railroads more independent. Perhaps, indeed, the primary reasons for the freight contracts with steamship lines no longer obtain.

## The Railroads Again

No great perturbation is discernible in intercoastal steamship offices at the prospect of transcontinental railroad rates being reduced in order to permit the railroads to compete with the Panama Canal lines. There is a general belief that reductions, for which the railroads have petitioned the Interstate Commerce Commission, could not possibly become effective until January, 1923; and one well-informed railroad traffic manager is quoted as having said that the more likely interval would be four years. Within that time, even within one year, a great deal might happen. For example, within a few months the intercoastal steamship lines are quite likely to be placed under some competent government regulatory body, either the Interstate Commerce Commission or, more probably, the regulation department of the Shipping Board. If something of that nature does occur a resultant effect upon road-steamship competition should be manifest.

### A Few Figures

But the real point of issue is the ability of the water carriers to compete with the transcontinental railroads under any schedule that the Interstate Commerce Commission is likely to sanction. A railroad rate must be "reasonably compensatory," that is, the revenue accruing from any particular traffic must exceed the out-of-pocket cost of operations. Even so, if railroad rates were cut to the bone, to the bare minimum that could be described as "reasonably remunerative," it does not necessarily follow that the steamship lines could not go still lower and still return respectable earnings. One well-informed traffic man said that he believed that existing water rates in general could be cut in two if necessary. That would mean, in one case, that woolen goods might be transported from Atlantic ports to the Pacific for $2 as against the ruling rate of $4 and the railroad rate of $6. The best rate in pre-war days was that of the Southern Pacific's Sunset-Gulf route, this man continued, or $3, and he expressed the belief that the railroads would be a long time in returning to such a tariff.

After all, the true measure of remunerative steamship rates is not found in comparisons with those of the railroads. The one standard is offshore steamship rates. When it is stated that the average westbound intercoastal rate is about $20 a ton, as freight lists go, and the average eastbound is $10, one may see that the intercoastal steamship lines are in far better shape than the fellows who are plying offshore and meeting bitter competition of British and Japanese lines, some of which recently have made tariffs as low as $3 a ton on coal from Cardiff to the Pacific Coast. Well, speaking roughly, the intercoastal lines might reduce rates indefinitely until their earnings approached those that might be expected in foreign trade; in other words, until offshore routes began to be practically as attractive as domestic. Such is the true theoretical minimum limit of intercoastal rates, but it is not likely to be approached at any time, and certainly not within the next few years.

### How Low Can They Go?

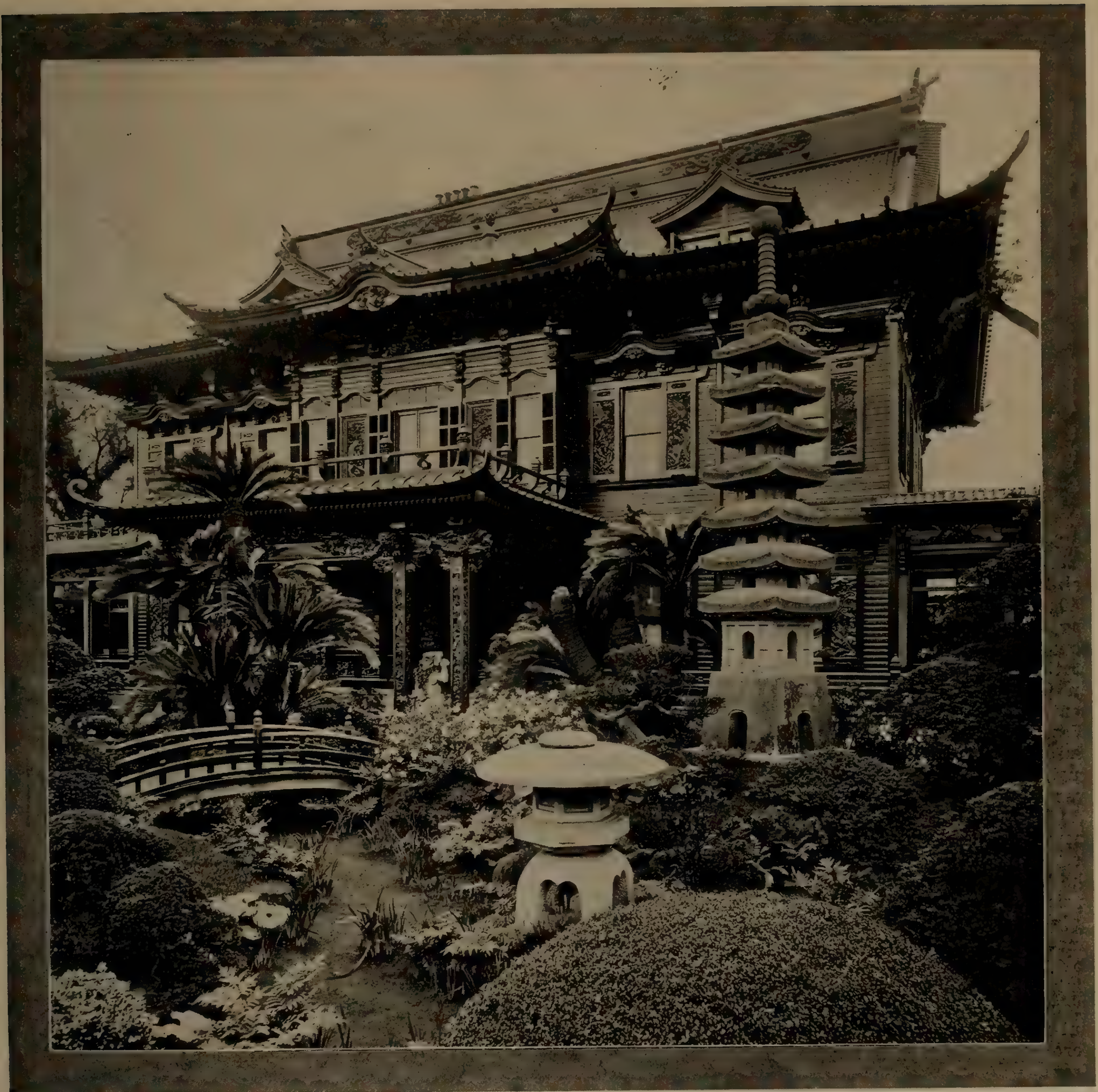
To such low schedules the railroads, in the opinion of steamship operators, would find it impossible to go, unless the Interstate Commerce Commission should permit them to make rates that were not "reasonably compensatory." But even if the I. C. C. should do such a thing, there is always the interior country to be considered. We have today the spectacle of the intermountain territory aligned strongly against any transcontinental rate reductions—a spectacle that has been witnessed ere this and is likely to be seen more than once in the future. Unless transcontinental traffic not only pays its own expenses of operation but leaves besides an appreciable margin for the general railroad treasury, the inland shipper, who does not enjoy vigorous rail and water competition, is quite likely to find railroad charges unreasonably high or even insupportable. Anyone, therefore, who believes that the railroads can reduce their transcontinental rates indefinitely appears to be rather illogical, even though he should concede the much lower ton-mile cost of water transportation.

The whole recent history of intercoastal steamship rate-making indicates clearly what is to be expected in the future: the railroads will publish their tariffs and the steamship lines will go enough below them to command business. Prior to 1920, that is, in the early days of the canal, the general practice was to quote intercoastal rates directly from railroad tariffs, with 20 per cent deducted, this margin being regarded as sufficient to command business. When intercoastal service was resumed almost two years ago the tariffs were based directly on railroad schedules, and are to this day, despite various breaks that completely severed the connection between some rail and water rates. So long as the intercoastal is a protected trade, closed to foreign shipping, and so long as there are few private operators with tonnage that they can employ in the Panama Canal service, cutthroat competition, such as is being witnessed in foreign shipping, is extremely improbable; in short, water rates will be based on railroad, but will be sufficiently lower to offset marine insurance, etc., and the natural bias of the domestic shipper in favor of the land carrier.

### Regulation of Water Rates

An important movement to end rate-cutting in intercoastal shipping is under way today. Plans are going forward in the offices of the Shipping Board to draft a bill placing the water lines under the regulation division. Such action would result in the fixing of minimum rates instead of maximum and in the orderly publication of tariffs as in the case of the railroads in their dealings with the I. C. C.; it would end rate-cutting to which the railroads now object so vigorously, but it also would put the steamship lines under a body that is decidedly favorable to their cause, to-wit, the Shipping Board, and not under such a potentially hostile body as the I. C. C.

The question of remission of Panama Canal tolls remains to be considered. Little if any effect on water rates is to be expected, despite assertions to the contrary credited to railroad officials. In the absence of cutthroat competition, which, as was indicated above, is not probable, railroad tariffs will continue to be the guide of steamship operators. Nine years Emory R. Johnson reported to the Canal Commission on this question in words that are worth remembering today: "It is not probable . . . that the exemption of the payment of tolls will appreciably affect the rates charged by the regular steamship lines. The nonpayment or remission of tolls will chiefly aid the owners of the coastwise marine and not the shippers. . . . Whether there be tolls or no tolls, the line steamship rates will not be based on cost of service, but will be such as the traffic will bear and increase. . . . It is probable that the payment of tolls by ships engaged in our coast-to-coast trade would affect neither the rates of the regular steamship lines nor the charges of the transcontinental railroads." Professor Johnson's argument is more logical by far than that of Edward Chambers, vice-president of the Santa Fe, who asserted that "if tolls of the Panama Canal were eliminated, it would create a lower basis for rates via water routes, which in turn would compel the lowering of the rail rates and place an additional burden on the Western railroads and



This is a view of Temple Court, formerly the home of F. W. Horne, a pioneer American business man in Japan, on the Bluff, Yokohama, which has been purchased by Soichiro Asano, president of the Toyo Kisen Kaisha. Here Mr. Asano will give his receptions to passengers arriving in Japan by vessels of the T. K. K., and also will use the mansion as a small and exclusive hotel. Mr. Asano's receptions heretofore have been given at his own home in Tamachi, Tokyo.

Western manufacturing interests." Mr. Chambers ignores, consciously or unconsciously, every recent tendency of intercoastal shipping.

## Briefs

The Coos Bay Lumber Company reports a record voyage of the steamer C. A. Smith. She arrived at Bay Point at 10 a. m. Monday, discharged 1,500,000 feet of lumber and departed for sea that evening. She arrived at Coos Bay Wednesday and loaded and sailed Thursday with 1,500,000 feet; arrived at Bay Point at 8 a. m. Saturday and discharged and sailed at 5 p. m. the same day, having delivered 3,000,000 feet of lumber within a week.

* * *

The Empire Shipping Agency has been organized in Vancouver to take over the agencies of the General Steamship Corporation, Luckenbach Steamship Company and French Line (C. G. T.), under the management of F. C. Garde.

* * *

The following announcement has been made by W. J. Love, vice-president of the Emergency Fleet Corporation in charge of traffic: Cable advices from London were received by the Emergency Fleet Corporation this morning, giving the text of the agreement on the Egyptian cotton situation between the Liverpool liners and the United States Shipping Board Emergency Fleet Corporation. By the terms of this agreement vessels operated by the United States Shipping Board are to receive 50 per cent of the business on direct and indirect shipments. The first ship, the Ophis, will go on this berth at Alexandria December 15. The agreement is to exist for two crop years.

* * *

The profit earned by the Nippon

Yusen Kaisha during the half-yearly term ended on September 30 last was not more than yen 3,300,000, or slightly above 11 per cent of its paid up capital, yen 58,000,000, says the Japan Advertiser. The company cleared a profit of yen 5,541,000 during the previous term, so that the profit for the term under review is a conspicuous decrease. Under such circumstances, the management of the company has decided to make an outlay of about yen 2,800,000 from the dividend equalization fund in order to declare a dividend of 20 per cent per annum, and to carry forward approximately yen 400,000 to next term.

* * *

The United States coastwise trade through the Panama Canal during August, September and October, 1921, was more than double the trade for the corresponding period in 1920. The cargo handled in 1920 amounted to 268,747 tons, and in 1921 it aggregated 554,834 tons. Of the latter total, 214,449 tons was westbound, and 340,385 tons eastbound, the trade being thus fairly balanced, with reasonable cargoes offering in either direction. Another trade that shows an increase of more than 100 per cent is the eastbound trade from the West Coast of the United States to Europe. The cargo handled in August, September and October, 1921, was 582,719 tons, as compared with 285,441 tons in 1920. But the cargo moving in the opposite direction, from Europe to the West Coast of the United States, was comparatively insignificant in 1920, amounting to only 44,978 tons for the three months under review, and declined in 1921 to 11,855 tons. The majority of the sixty-two vessels proceeding this year from Europe to the West Coast went out in ballast, besides which fifteen foreign vessels went out in ballast from Atlantic ports of the United States to the West Coast to load return cargo for Europe. Closely connected with the two trades dealt with in the preceding paragraphs are the Canadian coastwise trade, the trade between Western Canada and Europe, and the trade between either seaboard of Canada and the opposite seaboard of the United States, in all of which there has been development.

* * *

Announcement is made that the Pacific Steamship Company has purchased the former German combination vessel Callao for its Pacific coastwise trade and that she will be placed in service in February. Under the name of Ruth Alexander, after the wife of President H. F. Alexander, she will replace the lost Governor. The purchase of the Callao probably ends for the time being any hope that the Pacific Steamship Company will build new vessels.

* * *

Struthers & Barry, an unincorporated partnership, has succeeded Struthers & Dixon, Inc., and the stock of the latter company is being retired. The change was forecast when Captain Andrew Dixon retired from the firm. The new partner is F. M. Barry, who had been operating manager of Struthers & Dixon. The old staff will be retained.

* * *

The International Shipowners' Conference, held in London November 23 to 25, discussed a number of topics, chief among which were the general interests of shipowners of all nationalities, shipowners' right of mortgage and detention and the unification of regulations relating to bills of lading, unification of all necessary documents, deck loading and load line, bulkheads for passenger cabins, life saving equipment and wireless agreement. A number of resolutions were adopted, among them one recommending that the Hague Rules be made universally applicable by means of an international convention another that international rules be adopted for the transport of deck cargoes of wood and one that the various load line regulations be unified. On the matter of life-saving appliances it was recommended that an international committee be appointed to consider what modifications are advisable in the 1914 Shipping Convention of London, in the light of recent experience and especially to report on the possibility of providing an automatic alarm device to replace human watches on vessels, as provided for in Article 34 of the convention.

* * *

The Los- Angeles - Seattle record has been broken by the Shipping Board 535 Pine Tree State, operated by the Pacific Steamship Company which made the voyage in November in 66 hours, as against the 71½-hour run of the Keystone State last summer.

# With the Exporters and Importers

## Lively But Not Little

In the December number of Pacific Marine Review a statement was made that "lively little rate wars" had broken out in three trades. This language was so unfortunately chosen as practically to impair the accuracy of the article. It is true that rate wars have broken out; that they are lively cannot be denied; bue few would describe them as "little." Indeed, no.

The extent of the trouble in the Pacific Coast-Europe trade may be measured by the fact that two vessels of a strong company have been diverted to Oriental loading instead of being dispatched back to the Continent. When such a thing occurs in a trade that heretofore has been one of the best, the rates of which have been fairly stable in a chaotic universe, "little" does not describe the magnitude of the upheaval. The echo of that diversion had scarcely died away when the Blue Funnel, through Dodwell & Company, agents, announced that the Memnon, loading at San Francisco about the middle of January, would make a rate of 35 cents a hundred pounds on canned goods and 50 cents on dried fruits. Other companies were accepting "anything," as one freight manager expressed it. Let such rates be compared with those fixed by the American-Hawaiian and Harrison Direct lines July 1, 1920, which were unchanged until October: canned goods, United Kingdom, $1 strapped; $1.15 unstrapped; Continent, 90 cents and $1.05. Dried fruit, United Kingdom, $1.25 in bags, $1.25 in boxes strapped, $1.40 in boxes unstrapped; Continent, 85 cents, $1.15 and $1.30. Comment is unnecessary.

### Worse and More of It

In the Pacific Coast - Australian trade a singular situation has forced lumber rates down. A rather large supply of cargo in Australia, especially of wheat for Europe, has attracted vessels to the South. But how to get them there? Cardiff coal for the Pacific Coast would take a steamer part of the way; lumber would supply her with cargo for the remainder of the voyage. If these two legs of the triangular, around-the-world sailings could pay bare expenses, the steamship owner might look to the return voyage with wheat to the United Kingdom to return a profit. Accordingly rates as low as $3 a ton have been made on the coal and $14 or so on lumber. This latter reduction has been met by the Pacific Coast - Australasian Freight Tariff Bureau, which made a cut of $1, effective December 12, on lumber moving from British Columbia and United States Pacific Coast ports to Sydney, Melbourne and Adelaide, the new rates ranging from $17 Canadian to $15.50 United States currency. No changes have been made on lumber for New Zealand or on redwood lumber to either New Zealand or

Australia. The conference also reduced overland general cargo from $15 to $12, effective December 8.

In the United States intercoastal service steel has dropped from 75 to 60 cents. The reduction appears extremely belated, inasmuch as the conference knew full well that the rate had broken long ago, the Atlantic-Gulf & Pacific having served notice that it would be compelled to meet competition of the Williams Line. The latter company had booked a large lot prior to joining the conference. What happened after it did join is somewhat nebulous, but either steel moved at 60 cents or the conference thought that it did; and a firm conviction is sufficient to disturb rates, regardless of the truth. In any event, the rate has broken; and so have barn-doors been locked after horses have vanished. Tin plate has been cut from 75 to 60 cents, carload lots, effective January 1.

### A Blessed Optimism

While some conferences are staggering about in the chill dawn, the Shipping Board manifests a blithesome faith by organizing others. Perhaps they won't be so humanly frail. The latest newcomer is the Pacific Coast-Cuban Eastbound Conference, organized on November 15 with the following members: Pacific Mail, Luckenbach, Pacific-Caribbean-Gulf (Swayne & Hoyt). Robert Dollar is maintaining rates and dispatching a representatives to meetings, although the line is not formally a member; and the Osaka Shosen Kaisha, pending approval of Osaka to actual membership, is pursuing the same course. Rates rule both direct service and transshipment at United States Gulf ports. This trade appears to be the last radiating from the Pacific Coast of the United States to be blanketed by a rate-making organization. J. H. Todd is chairman and secretary, as he is of the other Shipping Board conferences.

## Export Bill of Lading

At a general session of the Interstate Commerce Commission in Washington October 21, an order was issued, released for public notice December 2, and going into effect on or before February 15, 1922, providing for a uniform export bill of lading to be used by common carriers, subject to the jurisdiction of the commission, in connection with ocean carriers whose vessels are registered under the laws of the United States, says the commercial law division of the Department of Commerce. Beginning on the date mentioned, all common carriers will discontinue the use of various through export bills of lading hitherto used. Transportation companies are ordered to comply with the new regulations on not less than five days' notice to the commission and to the general public by filing and posting tariffs in the manner prescribed in the Interstate Commerce Act.

The new through export bill of lading relates to transportation of property from points within the United States to points in non-adjacent foreign countries. In form it is suited for filling in on an ordinary typewriter. It is marked "Uniform Through Export Bill of Lading," with the following caption beneath reading "Straight Bill of Lading—Original—Not Negotiable." The contract terms and conditions are printed on the face of the bill of lading and consist of three parts, Part I recites the clauses valid with respect to the service until delivery in the port of shipment. Part II contains clauses defining the service from delivery in port of shipment until delivery in port to nearest point of destination. Part III deals with the service from arrival at port nearest to point of destination until arrival at ultimate destination.

The commission, in its report accompanying the new bill of lading, notes its limitations of jurisdiction over the ocean carriers in respect to Parts II and III, but states that the general provisions and rules contained in bills of lading used by common carriers at the present time in relation to transportation of property to non-adjacent foreign countries will be considered unreasonable insofar as they differ from the uniform through export bill of lading. Parts II and III of the new form are an approved modification of clauses of similar tenor submitted to the commission by the uniform bill of lading committee.

Copies of the new bill of lading form, with the report prepared by Commissioner Hall, may be had on application to the Interstate Commerce Commission (Document No. 4844).

## Beyfuss Freight Report

San Francisco, December 23.

Since we wrote our report of November 26 there has been no change in the situation so far as grain rates to Europe for full cargoes are concerned, and no market has shown any very active tendency. In fact, the past four weeks have been rather quiet.

Several steamers are again reported with lumber to the Orient and rates have shown a slightly upward tendency, the latest fixtures having been done at $15.

Two time charters have just been reported of Norwegian steamers of about 6000 tons deadweight at $1.20 for twelve months. These vessels will be used principally in the trans-Pacific lumber trade.

For Australia there have been several sailing vessels fixed at rates ranging from $14 for Sydney to $16 for Melbourne, and also two steamers are taking lumber, both fixed on time charter, one reported at 5/- delivery Cardiff, re-delivery Australia, and this steamer is coming via North Pacific with a cargo of Welsh coal. The other was reported taken at 7/- delivery North Pacific, re-delivery Australia.

Coals from Newcastle to San Francisco: two large sailing vessels are reported at $3.50 per ton, loading early next year.

West Coast of South America has continued almost lifeless, although one sailing vessel is reported at about $17.50.

For South Africa, another one of the locally owned large sailing vessels is reported fixed at $23.50 for loading early next year, and a motorship is reported for full cargo of ties to the Red Sea at $23.

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## Where Our Business Lies

The following table, prepared by the statistical division, Shipping Board, shows exports and imports, including oil, of the United States for the ten months, January to October, figures in long tons:

| | Exports | Imports |
|---|---|---|
| East Coast of So. America | 2,074,567 | 941,496 |
| West Coast of So. America | 535,433 | 489,423 |
| Gulf and Caribbean | 3,738,247 | 16,933,501 |
| Atlantic Europe | 9,400,559 | 1,322,528 |
| United Kingdom | 7,787,809 | 610,733 |
| Mediterranean | 5,593,801 | 375,771 |
| Africa | 586,085 | 142,006 |
| India | 401,347 | 463,993 |
| Australia | 398,911 | 131,781 |
| Orient | 2,231,932 | 531,754 |
| Pacific Canada | 316,839 | 230,695 |
| Atlantic Canada | 7,068,644 | 2,018,065 |
| Others | 345,030 | 225,445 |
| Total | 40,479,204 | 24,417,191 |

### Europe Buys Less

There is a decided tendency toward a smaller volume of exports to Atlantic Europe, which has been our best market in the past. During October 622,550 long tons were exported to this region, as compared with 907,494 tons in September and 1,317,153 tons in January. The depreciation in European currencies undoubtedly has a good deal to do with this decline, which is taking place during the season of the year when the volume of our exports is ordinarily near its maximum.

Since so large a proportion of the volume of our imports is oil, it is natural to find that the Gulf and Caribbean region leads as a source of our imports. During October this region supplied practically two-thirds of the 2,976,465 long tons of commodities coming into this country, while of the total volume of imports into the United States so far this year, shipments from the Gulf and Caribbean region constituted about 70 per cent.

### Gulf and Caribbean Best

Atlantic Canada stood second in importance as a source of imports, but led all other countries and regions in the volume of commodities shipped to and from the United States during October, thereby maintaining the same relative position it held in September.

Taking the total for the first ten months of this year and combining imports and exports, it appears that countries bordering on the Gulf of Mexico and the Caribbean Sea lead all other regions in the volume of trade with the United States, while Atlantic Europe comes second, Atlantic Canada third, and the United Kingdom fourth. In the figures for the first nine months, the United Kingdom was third and Atlantic Canada fourth. This change in the relative position of Atlantic Canada and the United Kingdom is due partly to a downward tendency in exports to the United Kingdom and partly to the increasing imports from Atlantic Canada, which at this season is sending a great deal of grain into the United States.

## Page Freight Report

San Francisco, December 27, 1921.

Since our last report, dated November 16, the only full cargo fixture for grain from the North has been the motorship Pedro Christophersen at 30/- for the United Kingdom or Continent, option of 40/- for the Mediterranean, taken by the Portland Flouring Mills. All other business in this line has been in parcels at freights ranging from 25/- to 30/-, and the same rates have applied for parcel shipments for barley for the United Kingdom from San Francisco. At the present writing there is very little demand for space either from the North or locally.

The activity in chartering for squares and logs for Japan continues, and a number of Japanese steamers have been fixed at from $14.50 to $15 per thousand feet, according to position, early tonnage being more in demand. Several steamers have been taken on a lump sum basis, among which are the steamers Francisco Maru, Denmark Maru and Thames Maru, each on a lump sum of $50,000. The steamers Iwatsan Maru, by Mitsui & Company, and the Shinsu Maru, by the American Trading Company, have been taken for the same business, but the rates have not been divulged. The steamers Margaret Coughlan and City of Victoria, also for the same business, have been taken by the Pacific Export Lumber Company at $15 per thousand feet.

Messrs. J. J. Moore & Company have taken the steamer Tricolor, government form of time charter, for one trans-Pacific voyage delivery Pacific Coast, redelivery Australia at 7/- per deadweight ton, and W. L. Comyn & Company have taken the steamer Manchester Spinner, delivery Cardiff, redelivery Australia, at 5/- on the deadweight ton per month. From Cardiff this steamer will bring coal to the Pacific Coast. The steamer Hector has been taken by Dant & Russell for one trans-Pacific voyage at 6/-, delivery Shanghai, re-delivery China or Japan, and today it is reported that the Norwegian steamers Bratsberg and the Unita have both been taken on time for twelve months, trans-Pacific business, at $1.20 per deadweight ton per month. At the present time neither the name of the charterers nor the point of delivery and re-delivery are stated, but it is to be inferred from the rate paid that delivery is to be on the Pacific Coast.

For Port Sudan the motorship Indien has been taken for a full cargo of ties from the North Pacific, charterers not named as yet, at $23.50 per thousand feet. Balfour, Guthrie & Company have taken the schooner Undaunted for lumber for Capetown at $23.50. The barkentine Amy Turner and the schooner Lizzie Vance are both fixed for spruce from Coos Bay to Melbourne by J. J. Moore & Company at $16. The only fixtures reported for lumber for the West Coast are the schooners Vancouver, for Callao by the United States Foreign Sales Corporation, the freight rate not given, and the J. W. Clise, lumber and steel rails for Lobitos by Balfour, Guthrie & Company, on private terms. The schooner Commodore has been fixed for coal from Newcastle to San Francisco at $3.50 by the Bank Line Transport & Trading Company, and the schooner Bianca has been taken for the same business by W. L. Comyn & Company, one port Puget Sound - San Francisco range, at the same rate. These same charterers have put in two of their sailing vessels to take lumber for their own account to Shanghai.

W. R. Grace & Company have sold the steam schooners Santa Inez and Santa Rita to Crowley & Mahoney at a reported rate of $160,000 each, and they have also sold their steam schooner Santa Alicia to Sudden & Christenson on private terms. The steamer Thorvald Halvorsen, formerly Honoluluan, has been sold to the Luckenbach Steamship Company for a reported price of $225,000. The ships Dunsyre and John Ena are both reported sold to J. Botts on private terms.

PAGE BROTHERS, Brokers.

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A cross libel has been filed by the United States Shipping Board against the Pacific Steamship Company, owner of the steamship Governor, which was sunk in collision with the Shipping Board freighter West Hartland in April, 1920. For the loss of the Governor the Pacific Steamship Company is asking $2,500,000; the cross libel of the Shipping Board is for $79,345, of which $68,926 represents the cost of repairs and $8844 the cost of discharging lumber, and $1575 the loss caused by laying up the vessel. The Shipping Board also has petitioned for limitation of liability, to be granted should the West Hartland be held responsible for the collision.

* * *

Dodwell & Company, as agents of the Canadian Government Merchant Marine, announce that policies will be issued at the office when bills of lading are signed, either F. P. A. or with average, covering cargo from warehouse to warehouse.

Hill, Hubbell & Company and the Bird-Archer Company of California announce the removal of their offices from 1 Drumm street, San Francisco, to 115 Davis street.

The Lakewood Engineering Company announces the consolidation of its Pacific Coast office with the offices of the Smith-Booth-Usher Company, its exclusive representative, at 50 Fremont street, San Francisco, and 228 Central avenue, Los Angeles.

# Marine Insurance

CHARLES F. HOWELL, Eastern Contributing Editor

## In Re the Shipping Board

Marine insurance discussion during the past few weeks has been chiefly concerned with the hints that have been drifting out of Washington to the effect that the Shipping Board was planning to engage in the cargo business. This action, ran the rumors, was the development of discrimination against the vessels of the board by the underwriters. At first, it cannot be denied, these reports proved disconcerting to marine insurance men; there is little enough margin of profit in cargo business, as it is, without having rates slashed to nothing by reckless and inexperienced government experimenters who would lose no sleep over the consequences since the taxpaying public would have to foot the bill. But a little thought showed the improbability of any such drastic action being taken; first, because the Jones Act grants no such authority and the necessary special legislation could not possibly be secured in the face of the popular outcry against "government in business," and, second, because the appropriations committee of the House would never consent to the granting of such large funds as would be required to conduct an enterprise of this character. Furthermore, the underwriters were almost a unit in protesting that no discrimination in rates had been taken against Shipping Board boats as such, but that the best quotations possible are being made on cargo carried by them. Marine insurance is a scientific business and past experience has to enter to an important degree in fixing rates. A large amount of tonnage was constructed during the war when quantity rather than quality was the slogan, and no one is going to deny that vessels so built cannot be as good risks, from an underwriting standpoint, as those constructed during normal times. This applies just the same to Shipping Board boats as to those of private ownership, and has to be taken into account in rating risks. It would be manifestly unfair to those shippers who use approved liners to increase their rates so as to offset losses that will be incurred in writing business on inferior and hastily constructed vessels at liner rates. Furthermore, if underwriters were to increase regular liner rates the business would promptly pass to foreign insurance markets, while if underwriters must disregard all underwriting standards and accept all risks offered at the minimum first liner rate they would soon have to close their doors. American underwriters are just now engaged in a desperate struggle to keep our insurance from foreign domination, and they need the moral support of the American people instead of receiving more than their share of the mud-slinging so prevalent at this time.

Thus were the two sides of the controversy closely drawn when, as it would appear, the Shipping Board commissioners saw a great light and directed their attack from a new angle. In an exclusive communication to the Weekly Underwriter of New York, Commissioner Meyer Lissner denied that the government has decided to go into the cargo insurance business, but announced that the Shipping Board proposes to make an investigation of marine insurance because "Shipping Board vessels are discriminated against by marine insurance underwriters," and because "there is much room for improvement generally in the matter of American marine insurance." This announcement carries the greatest weight from the fact that Mr. Lissner is the member of the board to whom insurance matters are regularly referred. From many sources in close touch with the movements at Washington it is insisted that the board had definitely decided to enter the cargo business; hence, they conclude, it must have been proven to the commissioners that it would be impossible to secure the necessary legislation and that further "government in insurance" would have to be abandoned.

## Institute Elections

At a recent meeting of the directors of the American Institute of Marine Underwriters the following officers were elected for the ensuing year: president, William H. McGee; vice-president, Louis F. Burke; secretary and treasurer, Douglas F. Cox. The appointment of standing committees was subsequently announced by the new president as follows: admissions—S. D. McComb, F. H. Cauty, W. W. Parsons; forms and clauses—H. H. Reed, W. J. Roberts, Samuel Bird, Jr.; legislation—L. F. Burke, Douglas F. Cox, W. L. H. Simpson.

## Oil Waste Legislation

Hearings recently resumed by the rivers and harbors committee at Washington have brought out much valuable data and many surprising angles of the proposition to prohibit the discharging of waste oil in our navigable waters. This would, at first blush, appear to be a simple problem, but examination has proved the contrary. Both fire and marine underwriters have, for some time, been actively urging the importance of protecting our valuable waterfront property against the grave menace of conflagrations arising from sparks dropped into the floating oil that covers so much surface of our harbors, and here and there municipal ordinances have been passed with the purpose of reducing the danger. But government action is necessary, with appropriate penalties fixed. Such a bill was recently introduced in the House by Representative Appleby of New Jersey; but Mr. Appleby, who hails from Asbury Park, was particularly interested because oil dumped into the high seas off the Jersey shore drifted onto the bathing beaches and injured that kind of business. It has been discovered that the Department of Commerce can handle the subject in a comprehensive and world-wide fashion by refusing clearance papers through American consuls unless a pledge is given not to discharge oil anywhere during a voyage. But immediately the absurdity of a situation was seen in which a ship-operator is warned against doing a certain thing when no alternative substitute is offered him. Fishing interests were instantly in arms against dumping oil waste outside the three-mile limit, because the heavy tar element drops to the bottom and destroys both shell and finny fish. The discharging into inland rivers of the refuse of mines, chemical works and dye factories has long ago killed the fish of such streams; but, to the surprise of many, the miners sent a delegation to Washington who pointed out the enormous financial cost in which they would be involved for a reconstruction of their river plants should any such prohibition be made law. It is believed that objection from this source would be overcome if the prohibition were limited to oil products.

It is safe to forecast that the final form of the bill that will grow out of the material developed by the rivers and harbors committee will include the establishment of disposal plants at each of our more important ports, properly constructed and supervised. Valuable by-products are obtainable from the discharged oil waste, and for this an adequate price would be forthcoming. There would be nothing expe-

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rimental in the adoption of this method, as it is now in successful use at several of our own ports and in a number of European cities. The bill will doubtless include a prohibition against the discharge also of acids or other manufacturing wastes, or refuse matter of any kind dangerous to shell or finny fish, in any navigable waters of the United States, or into any tributary thereof, and providing a penalty. As has been intimated above, the inclusion of this sweeping prohibition will depend upon the reconciliation of miners and chemical manufacturers. In any event, marine underwriters can be depended upon to further any workable bill along this line.

## Sank in New York Harbor

Considerable speculation ran the rounds of the New York marine insurance market recently when the Tanamo went down in the city's harbor with a loss of both ship and cargo. She was bound from Porto Rico to New York, and it was learned that a fire had raged in her hold during the greater part of the voyage and could only be extinguished by opening the seacocks and permitting the vessel to fill. The fire damage is, of course, a particular average; the damage due to the sinking will be made good in general average. It is intimated that the fire was of incendiary origin, but even so the liability of the underwriter will not be reduced. Fire and its natural consequences are covered unless the fire be occasioned by an agency specially excluded from the policy, and this is not the case with ordinary incendiarism.

## Hague Rules Endorsed

In spite of all the flurry of objection raised by marine underwriters to the Hague Rules, 1921, the American Institute of Marine Underwriters held a special meeting recently and endorsed them, with but one vote in the negative. It appears that the motive actuating this step grew out of the conviction that it would be better to take the minor advantages offered by the rules rather than to continue hoping for the greater results possible if the Harter Act is ever amended as is now under consideration at Washington. The language of the endorsing resolution was as follows:

"Resolved, That the American Institute of Marine Underwriters approves the adoption of a uniform ocean bill of lading, framed in accordance with the Hague Rules, 1921, and considers it desirable that steps be taken to secure uniform legislation in the various maritime countries, with a view to carrying out the intent of these rules. While it is the view of this institute that the language of the rules, in a few particulars, notably Article V, should be modified in the interests of clarity, we believe that such modifications can be readily brought about."

## Pipe Rust Damage

The question has been raised as to whether an underwriter is liable for damage to a shipment of iron pipe under the following conditions: the pipe was shipped from New York to Cuba and insured free of particlar average under 3 per cent or the vessel be stranded, sunk, burned or in collision. The vessel stranded, but the cargo in the hold where the pipe was stowed was not damaged as a result of the stranding. Nevertheless, as the iron pipe had been receipted for by the steamship company in good condition, and was delivered in a rusty state, the shipper felt that the loss must have occurred on the voyage and therefore be a liability under the marine policy. As the facts as stated do not show loss from an insured peril they are insufficient to justify a claim under the policy. The underwriter is not rendered liable for all loss which occurs to the iron despite the fact that he is liable for loss or damage, irrespective of percentage, in the event of the happening of one of the insured perils. It merely makes him liable for all particular average, and in order to constitute a particular average loss it is necessary to show that the damage was occasioned by an insured peril. Consequently, if the iron in the present instance was damaged through exposure to the air or in any manner other than through one of the insured perils, the underwriter is not liable. The point is an interesting one.

C. F. H.

## Princess Sophia Decisions

In a decision filed at Seattle November 25, Judge Jeremiah Neterer of the United States District Court, Western District of Washington, reverses his former decision, filed September 30, in which he held that the Canadian Pacific Railway Company could not plead limitation of liability for loss of life and baggage resulting from the wreck of the steamship Princess Sophia October 25, 1918, when all of the 343 persons on board were lost. The second decision extends limitation to the passengers and their baggage as well as to cargo. In effect it means that, in the absence of a reversal by a higher court, 200 claimants will be limited to approximately $8000 aggregate damages, the vessel herself being almost worthless.

Judge Neterer's first decision was "in the matter of the petition of the Canadian Pacific Railway Company . . . . owner of the steamship Princess Sophia, for limitation of liability." It covers more than twenty-eight typewritten pages, and accordingly is too long to be published in full; but a digest will serve to show not only the steps by which the court arrived at the finding that "the liability of the petitioner may be limited as to the cargo of claimants but not as to the claims of passengers or their dependents or their baggage," but also will state authoritatively just what occurred after the

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steamship struck the reef and what was the part of the Canadian Pacific in suffering passengers and crew to remain aboard until the vessel foundered. The judge's summary of the testimony submitted, it may be said here in anticipation of a more detailed digest, is that the Canadian Pacific Railway Company had no hand in the refusal of the captain of the Princess Sophia to accept proffers of aid from vessels standing by.

### Contentions of Claimants

The decision first reviews the allegations of claimants and the replies of the Canadian Pacific. The former reiterate charges that have been frequently heard during the last three years: that the route of the Princess Sophia was extremely dangerous; that the Canadian Pacific habitually operated vessels over the course at unlawful speeds in thick weather or at night; that the Princess Sophia had on board an excessive and unlawful number of passengers; that steaming in a reckless manner she passed Eldred Rock and Sentinel Island light without sighting them, and at length, in a blinding snowstorm, struck on Vanderbilt Reef; that a hole two feet wide and sixty feet long was torn in her bottom; that all passengers could have been removed in safety to other vessels standing by; but that the Canadian Pacific, in order to avoid the expense of removing passengers, held them on board the Princess Sophia pending the expected arrival of the Princess Alice; with the result that a violent storm arose and the Princess Sophia drove across the reef and foundered, with the loss of all on board, at 6 p. m. October 25, forty hours after she struck. Other allegations deal with such subjects as the competency of the master, Captain Locke, the condition of the compass and the barometer, and so on.

The reply of the Canadian Pacific reviewed many of the circumstances of the wreck. The principal statements were that the company instructed its crews to navigate vessels carefully and that "if there was any fault . . . in the removal of the passengers . . ., such failure was due to an error in judgment on the part of the navigating officers. . . "

### Insurance No Interest

In considering the first issue, the liability of the Canadian Pacific under the liability act, Judge Neterer points out that a distinction exists "between the shipowner's liability under the general maritime law and his liability under the limited liability act"; that "the shipowner is liable for any damage for loss caused by a defective condition in his vessel either in equipment or crew, whether he had knowledge or not," but that the liability act "abridges the shipowner's liability under the general maritime law and limits it to his interest in the ship and freight unless he has privity or knowledge of deficiency except as hereinafter stated." Various citations follow and the judge then considers whether insurance may be regarded as an interest in the vessel. He decides that it may not, citing in support of his belief the decision of the Supreme Court in the City of Norwich: ". . . We are not only satisfied that the law does not compel the shipowner to surrender his insurance in order to have the benefit of limited liability, but that a contrary result would defeat the principal object of the law." The decision also considers the right of the Canadian Pacific to take advantage of the limitation act, in view of the foreign registry of the Princess Sophia; this question also was settled by the Supreme Court in favor of the foreign ship.

What, then asks Judge Neterer, is "privity or knowledge of the owner"? He finds that "where the owner in good faith appoints a competent agent to equip, man and maintain a vessel or her machinery, any acts of omission or commission of the agents not participated in personally by the owner do not constitute privity or knowledge"; and further: that "the privity or knowledge within the statute must be that of the managing officers of the corporation." He finds that there was no question of the efficiency of Captain J. W. Troupe, general manager of the Canadian Pacific coastwise fleet; of Captain Neroutsos, marine superintendent, and of Captain Locke, master of the Princess Sophia; and denies that Mr. Lowle, freight and passenger agent in Alaska, could be regarded as the company's managing agent.

### Master Wholly to Blame

The question of the part of the company's managing officers in holding the passengers on the Princess Sophia, which is a question of fact as brought out by the evidence, is approached. "It is also contended that Captain Troupe directed, or that some one in authority did direct, the holding of the passengers on the Sophia until the arrival of the Alice from Vancouver," the decision says. "This contention fails. . . . Messages could only be sent from the wreck by wireless. No messages between the Sophia and Vancouver or elsewhere could be exchanged unless sent over the United States cable office at Juneau, and only then by wireless, or by wireless. The entire record of the cable office and the wireless stations are in evidence. The master of the ship . . . was left to the free exercise of his own judgment . . . and for his error of judgment the petitioners may not be held."

No evidence exists, the judge held, to prove that the disaster was due to there being only two quartermasters on the vessel or that some of the young deck hands were inefficient. Furthermore, the judge goes on, there were many competent seamen and boatmen among the passengers. As to the vessel's equipment, the judge found that the Canadian inspector had authorized her to carry 100 additional passengers, or 350 in all, conditioned upon the placing on board of more life-saving equipment. In this connection the judge explores the question as to whether the vessel, which he found was "properly manned and equipped and seaworthy . . . in conformity to the Canadian laws," complied with United States requirements; as to this he decided that local inspectors need subject "such vessel to no other inspection than necessary to satisfy such local inspectors that the condition of the vessel is as stated in the current certificate of inspection." An intricate argument regarding the applicability of the La Follette Act follows.

### Two Classes of Liability

"It is finally urged that Section 4493 must be construed with Section 4283, and as so construed, the liability as against the claims of passengers or their dependents for both personal injuries or baggage may not be limited," the decision continued. "This is a more difficult question to determine, it being contended by the petitioner that while these sections may be construed in pari materia, that it has no application to foreign ships. Judge Gilbert, in the Annie Faxon, supra, said: " . . . . Sections 4283 and 4493 stand together in the Revised Statutes, and provide for two distinct classes of liability—the one prescribing the general rule that, for damage through negligent acts done without the privity or knowledge of the owner, liability should not exceed the amount or value of the interest of such owner in the vessel and her freight then pending; the other providing that for injury occurring through the neglect or failure of the owner to comply with the provisions of Title 52 of the Revised Statutes for the regulation of steam vessels . . . liability to the full amount of the damage. They are statutes in pari materia—the one creating a general rule of limitation of liability, the other making exceptions in favor of passengers. Section 4493, as appears by its title as well as by its provisions, was intended to provide for better security of life on board steam vessels. In Sherlock vs. Alling, 93 U. S. 99, a broad construction was given to that section; and it was held that under its provisions the master, the owner, and the vessel are liable for damage sustained by a passenger, arising through neglect to comply with the provisions expressed in Title 52, no matter where the fault might lie. . . ."

Section 4493, as quoted, provides: "Whenever damage is sustained by any passenger or his baggage from . . . or other cause, the master and the owner of such vessel . . . shall be liable to each and every person so injured to the full amount of damages, if it happens through any neglect or failure to comply with the provisions of this title. . . ."

### Law Extends to Foreigners

The meaning of the law being quite clear, the whole decision then begins to hinge upon its application to foreign vessels. "The contention that the provisions of this section do not apply to foreign vessels cannot be sustained," says the decision. ". . . The petitioners claiming the benefits under this section must be held to the limitations placed upon it and thus stand at the bar of the court on a parity with domestic owners. . . . We next come to a consideration as to the negligence of the petitioner. . . ."

Judge Neterer reviews the testimony substantially as follows: The Sophia departed from Skagway at 10 p. m. and struck Vanderbilt Reef, 56 miles distant, at 2 a. m. The normal speed of the Sophia was approximately 12 knots. "It is established, if not conceded, that during a portion of this time a blinding snowstorm was raging in Lynn Canal and in the vicinity of the catastrophe. . . . From the admitted or established facts it is shown that the vessel moved 56 knots in approximately four or five hours. . . . Bearing in mind the relation of the route of the ship to the light off Point Sherman, and the light on Sentinel Island and the location of Vanderbilt Reef, and the fog and snow . . ., and the stage of the tide and the relation of Vanderbilt Reef to the tide, the character and extent of the wound received by the Sophia, 'a clear rip the full length, 72 feet', 'no solid place in the length,' the rip being approximately two feet wide, the vessel not having much cargo beside the passengers, the conclusion is unavoidable that a proper lookout was not maintained, and that the vessel was going at an excessive speed and either one or both of these acts of commission and omission was the proximate cause of the foundering of the ship and death of the passengers."

### Presumption of Negligence

The decision quotes Article 16, International Rules: "Every vessel shall in a fog, mist, falling snow or heavy rainstorm, go at a moderate speed, having careful regard to the existing circumstances and conditions. . . ."; and Judge Neterer finds that "navigating through a storm of the character disclosed by the testimony at a speed which would carry the vessel upon the reef 72 feet . . . is contrary to the International Rules of Navigation . . . and a violation of the rules of ordinary prudence in navigation, and establishes a presumption of negligence. . . .

"There is much conjecture and speculation injected into the case by the claimants. Substantially all testimony offered was admitted into the record. I think what has been said disposes of all the material contentions raised, whether they have been specifically referred to or not, and where not specifically referred to are deemed immaterial to this issue or are not sustained, and it follows that the liability of the petitioner may be limited as to the cargo of claimants but not as to the claims of passengers or their dependents or their baggage."

### First Decision Reversed

After a petition for rehearing had been filed and rehearing had been granted, Judge Neterer, in his second decision, filed November 25, held that liability should be limited as to passengers, their dependents and their baggage as well as freight. This in effect is a reversal of the first decision on the principal issue after "the issue has been fully briefed and ably argued at bar. On the former hearing this issue was not fully briefed nor much discussed at bar."

The first paragraphs of the second decision are devoted to the watch kept aboard the Sophia. "The conclusion of the court heretofore stating that 'ordinary care on the part of the lookout and moderate speed would have prevented the catastrophe' is not a finding of 'neglect to keep a watchman'. . . . Neglect of the watchman to perform his duty with nothing more is without privity of the owner. . . . There is no finding or testimony that there was no watchman. It is also contended on the rehearing that Section 4401 R. S. was violated in that no licensed pilot was provided. . . . Section 4401 relates to 'coastwise seagoing vessels' and not to foreign ships. . . .

### An Intricate Question

"The duty to 'keep a suitable number of watchmen' on a passenger steamer at sea is clearly on the master. In the former decision it was inadvertently said: 'If the owner is guilty of negligence which was the proximate cause of the loss of lives of passengers, the liability for such death and baggage cannot be limited, whether or not the owner was privy to or had knowledge of such acts.' The language is too comprehensive. This is what should have been said: Neglest or failure to comply with the provisions of the law having relation to limitation or liability statutes would not bar liability for such death, etc."

Here follows a consideration of the question whether "all statutes upon the same general subject matter are part of one system or scheme with relation to the merchant marine and should be constructed together." Judge Neterer cites his former statement that "the petitioner claiming the benefit of this section (4483) must be held to the limitations placed upon it, and thus stand at the bar of the court on a parity with domestic owners;" and concludes: "and unless inhibited by statute such rule must be followed." Thereupon the decision takes up in detail the intricate question. Although, as claimants contended, a decision in LaBurgogne held that "as the petitioner called the various claimants into a court of admiralty of the United States to test whether, in virtue of the laws of the United States, it should be relieved in part at least of liability from the consequences of the acts of its agents, and, as the international rules have the force of a statute, we think the issues presented were of such a character as to render it essential that the right to exemption should be tested by the law as administered in the courts of the United States, and not otherwise; although the claimants cited English and Canadian decisions to the effect that application for limitation of liability places foreign vessels in the status of British and Canadian craft; nevertheless, Judge Neterer, after an exhaustive survey of the laws and decisions, holds that vessels of other countries are specifically exempt from the exceptions to the liability laws; or, in other words, that Section 4493 R. S., quoted above, in which limitation of liability is denied in case of neglect, does not apply to foreign vessels, because, as Section 41 of the Act of 1871 provides, "this act shall not apply . . . to vessels of other countries." The decision sums up as follows: "Careful consideration has been given to this issue and there is no conclusion that I can reach from any point of view of approach of this issue than that the conclusion granting limitation of liability only to cargo is erroneous. This court is limited by express legislation as construed and applied by the Supreme Court. Legislation is a matter for the Congress and not a matter of decree by the court. Liability should be limited to passengers and baggage as well as cargo."

## Syndicate A Appointments

At the regular monthly meeting of the directors of the United States Salvage Association December 15, Lawrence J. Brengle was appointed as acting manager of the association, vice Charles R. Page, who has resigned as of December 31 to undertake the management of the Atlantic Marine Department of the Fireman's Fund Insurance Company. John H. Trowbridge at the same meeting was appointed assistant manager.

Mr. Brengle is the underwriter of Syndicates B and C, American Marine Insurance Syndicates, in which capacity he will continue, devoting sufficient time, however, to the supervision of the administration of Syndicate A and of its operating agent, the United States Salvage Association. Mr. Brengle has had an exceptionally wide experience in the handling of the affairs of wrecked and damaged vessels, and as, through residence, he is familiar with the shipping of the Pacific as well as the Atlantic Coast, he is particularly well fitted to administer the affairs of the association.

John H. Trowbridge, who was formerly with the firm of Marsh & McLennan, but who has been the chief clerk of the syndicates for the past year, will, under Mr. Brengle's direction, have direct supervision of the administration of the affairs of the Salvage Association.

## Insurance Notes

Two hundred and twenty-two American merchant craft of 122,397 tons were lost through founderings, strandings, collisions or other causes in the twelve months ended June 30, says the annual report of the Coast Guard Service. Five hundred and fifty-five other American merchant vessels were involved in casualties entailing damage of $300 or more.

* * *

Hearing of the suit of D. J. Hanlon against the Dutch steamer Arakan for $250,000 for salvage services rendered in 1920, when the vessel grounded at Point Reyes, was begun before United States District Judge Dooling in San Francisco on December 12.

## An Unusual Salvage

On December 1 there arrived in New York, in tow of two wrecking steamers, the oil-carrier F. D. Asche, belonging to the Standard Oil Company, which was towed all the way from the Bahamas to New York without any bottom. The Asche met disaster in the cyclonic storm of late October after leaving New York for Texas City October 20. The Asche, a staunch steel steamer of about 12,000 tons deadweight, built by the Newport News Shipbuilding & Drydock Company in 1918, was swept out of her course and piled up on the reefs of the Bahamas six days after leaving New York. In the next twenty-four hours she was carried one mile over the reefs, from Stranger Reef to Manatilla Reef, where she remained fast on October 27, her forehold deck level with the sea in 5½ fathoms of water and her entire bottom practically ripped off.

Thanks to her construction on the Isherwood system, the hull of the Asche withstood the strain of the perilous position in which she lay on the rocks. Captain McKenzie and his crew remained on board the steamer and were able to use the donkey boiler and donkey engine to maintain their radio communication and also to provide their needs on board.

The wrecking steamers I. J. Merritt and Willard, of the Merritt-Chapman Wrecking Company, were sent to the assistance of the Asche. It was found, by the divers, that the hull, with the exception of the bottom, had remained intact and that the oil carrier could be raised by means of compressed air tanks.

After being raised and still kept afloat by the emergency compressed-air tanks, the two wrecking steamers took the Asche and towed her safely to New York. The salvaging of the Asche is practically a duplication of that of the steamer Curaca, which was sunk in Halifax Harbor in the great dynamite explosion during the war. The Curaca's superstructure was blown away entirely and she was buckled to an alarming extent. But her hull held together, she having been built on the longitudinal system, and she was finally raised and towed to New York, where she was repaired at the Robins Drydocks of the Todd Shipyards Corporation, the same yard that will now repair the Asche.

## Last U. S. S. B. Freighter

With the sailing of the 10,000-ton freighter Cathay from Shanghai for San Francisco December 22 the Shipping Board's freighter program approached an end. This vessel, built at the Kiangnan yard, will be the last of all cargo-carriers to be delivered. The only board vessels still under construction are combination steamers.

# In the Shipyards

## American Building

On December 1 there were 42 sea going steel vessels of 299,167 gross tons under construction in the United States for private account and 4 of 42,000 tons building for the Shipping Board, the total being 46 vessels of 341,134 tons, according to a report of the American Bureau of Shipping. Building as of November 1 was 54 vessels of 399,767 tons and as of September 1 70 vessels of 542,117 tons.

## Pacific Building

There were four seagoing steel merchant vessels of 70,000 deadweight tons under construction in yards of the Pacific Coast of the United States December 1, as compared with six of 85,750 tons November 1. Two vessels, one an 11,000-ton freighter for the Shipping Board and the other a 4750-ton tanker for private account, were delivered during November.

The following shows the status of work as of December 1:

| American Yards | No. Vessels | Agg'te D. W. |
|---|---|---|
| Tankers private | 2 | 30,000 |
| Freighters private | 2 | 40,000 |
| Totals | 4 | 70,000 |

All these were under construction by the Bethlehem Union Plant.

No seagoing vessels are under construction in Canadian yards, two C. G. M. M. freighters and a combination vessel for the Canadian Pacific Railway having been completed.

## New Work

Canadian Vickers, Ltd., of Montreal, has received an order from the Canadian government for an icebreaker for use in the St. Lawrence River. The vessel will be 275 feet long between perpendiculars and will be twin screw of 8000 indicated horsepower. Work on this boat will commence immediately.

On November 17 C. V. S. Wyckoff, consulting engineer and naval architect of San Diego and New York, holding exclusive rights for the combination of Arconstruct and Hullfin systems in power-driven marine craft, was commissioned by the Champlain Company of New York to prepare complete plans for the construction of three sea-going cargo towboats, each of 1500 tons' capacity, twelve consort barges each of 3000 tons' capacity, and one high-speed supply and passenger boat of 200 tons' capacity. All the power-driven craft will be designed on the combined Arconstruct-Hullfin principle, which was first introduced by Mr. Wyckoff in the ferryboat Poughkeepsie, now being built at the Mill Basin Shipyard of the Atlantic-Gulf & Pacific Company.

The Canadian government has called for competitive bids for the construction of an icebreaker. The vessel is to be a fully-equipped steel, twin-screw craft, 275 feet between perpendiculars, 57 feet beam, 19 feet draft, 32 feet depth, and 8000 horsepower. On the first competition the Wallace Shipyard & Drydock Company of Vancouver put in the lowest bid. It could not be accepted because it was about $500,000 in excess of the appropriation of $2,000,000 voted by the Canadian Parliament.

The North Vancouver council is considering bids for a new steel ferryboat for Burrard Inlet, which were opened on October 17. The Coaster Construction Company of Montrose, Scotland, bid lowest with £59,000, which at current exchange made the price approximately $250,000 for a steam vessel. J. Coughlan & Sons, Ltd., bid $300,000 for a steamer and $328,000 for a vessel fitted with Diesel-electric machinery. The Wallace Company of North Vancouver bid $285,000 for a steamer, $409,000 for a direct Diesel-drive, and $388,000 for a Diesel-electric. The bids were made to specifications prepared by the Wallace firm. The Scotch firm objected to the specifications, but the Wallace Company declared this object was based on a desire to build a ship that would be able to make the voyage from Scotland, while Wallace prepared specifications for a vessel that was to be used exclusively on the sheltered waters of the land-locked harbor of Vancouver.

A contract has been awarded the Dravo Contracting Company of Pittsburgh for the design, construction and delivery at their Neville Island plant, Ohio River, Pittsburgh, Pennsylvania, of ten steel coal barges 200 by 26 by 10 feet. The barges are to be delivered early in 1922 to the Island Creek Coal Company of Huntington, West Virginia. Another contract has been awarded to the company by the United States Engineer Office of Nashville, Tennessee, for the construction of a steel hull for a derrick boat. Work will soon be commenced on the fabrication and erection of derricks and structural work for the Lake Washington Ship Canal Locks at Seattle, Washington.

## Yard Extensions

Theodore A. Crane's Sons Company, Brooklyn, has completed its new drydock, Number 4, and has it in operation. The new dock is of the pontoon type, constructed of yellow pine and oak, electrically operated, and capable of lifting vessels up to 12,000 tons gross.

The Southern Drydock & Shipbuilding Company of Orange, Texas, has made a number of improvements at its plant on Blakeley Island. Among them was the enlargement of the marine railway, which now can handle ships up to 3500 tons.

The $1,000,000 fleet repair base, located on the site of the Emergency Fleet Corporation's concrete shipyard at the south end of San Diego Bay, will be placed in commission January 2. A 2500-ton marine railway was completed in December. The base is designed to meet docking and repair requirements of the vessels of the destroyer force, train and aircraft ships based at San Diego.

Plans to construct a shipbuilding and ship repairing plant on a site taking up part of Jersey City's south cove, adjoining the Morris Canal and lying east of Henderson street, were presented to the city commissioners by Counselor George L. Record on behalf of the Weehawken Drydock Company. The plant would be built immediately, provided the city authorities grant the lease asked for and would provide employment for 2000 men, Mr. Record said. Jersey City had under advisement for some the development of the south cove, but little headway has actually been made. The drydock company would like a lease of twenty-five years, with an option of a renewal for a similar period at the termination of the first lease. It is proposed to spend $300,000 to develop the tract, dredge it and erect the yards. The company announced that it would pay a rental to the city of 60 per cent of the rate now paid by the present occupants. Mr. Record explained that the company believed this to be a fair offer in view of the magnitude of the development, the number of men that would be employed, and the general benefits that would accrue to the city.

A contract for a floating drydock at Vancouver, B. C., is reported to have been awarded to the Burrard Drydock Company (Wallace and Coughlan interests). It is said that the Burrard Company is to receive an annual subsidy of 4 per cent on

$2,500,000 for a period of thirty-five years, or approximately $112,000 a year.

The Bowker Shipyard at Pippsburg, Maine, established in 1892 and specializing in the building of four-masted schooners, is planning to resume operations in 1922 after being shut down during the year, according to advice received from F. S. Bowker, general manager. The yard has a frame on its one launching way which will probably be utilized during 1920.

A fifth pontoon, 90 feet long and 168 feet wide, will be added to the floating drydock of the Todd Drydocks, Seattle, making the total length of the dock 520 feet. The pontoon will be built at Port Blakeley.

## Yard Mortality Heavy

The $2,000,000 shipyard of Doullut & Williams, on the Lake Pontchartrain end of the industrial canal at New Orleans, will be put on the auction block January 15. Several weeks ago the $2,5000,000 shipyard of the Foundation Company in New Orleans was sold at auction for $200,000.

The site of the former plant of the Willamette Iron & Steel Works at Portland, Oregon, on the west bank of the Willamette River, immediately adjoining Municipal Terminal No. 1 on the north, was purchased December 8 by the commission of public docks at a price of $180,000.

It has been officially announced that the Virginia Shipbuilding Corporation on November 5 filed in the United States District Court for the Eastern Division of Virginia, at Alexandria, Virginia, a petition in involuntary bankruptcy. This is the first formal announcement concerning the company's financial difficulties since a meeting held in Alexandria April 14 of the creditors of the company.

The United States Steel Corporation has decided to abandon its shipbuilding plant, operated by the Chickasaw Shipbuilding & Car Company, at Mobile, Alabama. It is reported that work on dismantling the plant has already been started. This plant was built at the request of the government for more ships during the war, and is said to have served its usefulness.

An order was signed by the Circuit Court at Baltimore November 30 appointing former Governor Phillips Lee Goldsborough, Bernard A. Brennan, John A. Spillman and Walter F. Peterson receivers for the Globe Shipbuilding & Drydock Company upon a creditors' petition filed by the N. W. James Lumber Company. The receivers were directed to complete repairs on vessels now under contract and to that end operate the plant. Corrected estimates placed the company's indebtedness at $2,000,000 to $3,000,000 and assets at $4,214,000, including cost of plant. The receivership proceedings followed a meeting of the stockholders of the company November 29, called for the purpose of voting upon a new financial plan, the adoption of which, it is said, would have enabled the company to liquidate its indebtedness and provide ample working capital. The suggested plan failed of adoption, it is said, because the Wisconsin interests, which own 27 per cent of the preferred stock, refused to vote their holdings. The Globe company removed to Baltimore from Superior, Wisconsin, in 1920. From 1917 to 1920 the company completed and delivered twenty--three ocean-going vessels at Superior without any financial assistance from the government.

## Japanese Naval Work

The Japan Advertiser publishes the following list of Japanese naval vessels, submarines excepted, now under construction at different yards: battleship Tosa, battle-cruiser Atago, light cruiser Natori and first-class destroyers Kiyokaze and Karukaze at the Mitsubishi Dockyard; battleship Kaga, battle-cruiser Takao, light cruiser Abukuma, and second-class destroyers Karukaya, Yuri and Omodaka at the Kawasaki Dockyard; light cruiser Isuzu and Kinu, second-class destroyers Hishi, Hachisu, Ayame and Botan at the Uraga Dockyard Company; second-class destroyers Sumire, Moyogi, Kakitsubata, Tsutsuji, Kaido and Basho at the Ishikawajima Shipbuilding Yard; second-class destroyers Tade, Ajisai, Shion and Nadeshiko at the Fujinagata Shipbuilding Yard; airplane depot ship Hosho at the Asano Dockyard Company; and gunboat Nakoso and special service ship at the Yokohama Dockyard Company.

The Kawasaki yard, Kobe, is making preparations to transform itself into a more general industrial plant should the Hughes armament proposals be accepted.

## Two Airplane Tenders

The United States Navy's first balloon and airplane carrier is nearing completion at the plant of the Tietjen & Lang Drydock Company (Todd Shipyards Corporation) in Hoboken. This vessel is being remodeled from the U. S. S. Wright, designed originally for use as a transport. The vessel was named in tribute to the late Wilbur Wright, from whose genius the development of aviation derived so much of its impetus. The Wright is one of the ships built at Hog Island for war service. In her new capacity her chief usefulness will be in handling balloons at sea, for the purpose of giving greater range to the vision of those in command of the maneuvers of battleship squadrons.

To put the Wright into condition for carrier work an amount of reconstruction has proved necessary which does not fall far short of the construction of the new vessel. Except for the engine and boiler room the whole ship is being altered and fitted out to meet the requirements of the Navy Department.

### Gas Generating Plant

In the after end of the vessel there will be a balloon well 100 feet long, 40 feet wide and 33 feet deep. Further aft there will be stowage space for another, smaller balloon, and also room for a plant in which hydrogen gas to inflate the balloons will be generated. The balloon wells will have protection from the weather by sectional hatches. The sections will be shifted into position by a trolley which will be run from the deckhouse to the stern.

At the forward end of the ship a large machine shop is being installed, fitted with everything necessary for the repair of the planes and balloons. All the machinery in the shop will be operated by electric motors. Part of the lower hold will be used for stores and magazines, but the major portion of the ship's interior will be given over to berthing and messing accommodations for the crew. The Wright will carry 542 officers and men. She measures 448 feet in length, with a 58-foot beam. She has a speed of about 17 knots.

### First for Japanese Navy

The first airplane carrier to be built for the Japanese navy and one of the first ships of its type in the world was launched at the Asano shipbuilding yard at Tsurumi November 13. She was the Hosho, authorized as part of the 1919 program.

At present the Japanese navy has only one airplane tender, the former transport Wakamiya, which has been made over to carry a few planes. The Hosho is believed to embody the latest ideas in the construction of such craft. She is not as large as the British Furious, although she is believed to be of later design.

The take-off and landing-on decks of the Hosho, according to newspaper accounts, embody some novel ideas. It is said that the three funnels, the wireless telegraph poles and the conning tower can be removed to one side of the deck to allow greater space for the planes, and when an airplane leaves or lands on the ship the funnels hang over the side.

The Hosho is planned to have a speed of about thirty or more knots, enough to enable her to cruise with the battle-cruiser fleet and also to give her enough speed to make landing on her decks safe. The chief dimensions of the Hosho are: length 510 feet; width 62 feet; draught, 20 feet; displacement 9454 tons. She is expected to carry a heavy armament of large guns.

## Shipyard Pay Scales

The Atlantic Coast Shipbuilders' Association has prepared a table showing November rates of pay in shipyards. In the first column is the rate for skilled labor, in the second is the district, and in the third is the rate for unskilled labor. These are to be compared with the Macy award of 80 cents for skilled labor and 46 cents for unskilled (36 cents in South Atlantic and Gulf) granted October 1, 1918:

| Skilled Labor | District | Unskilled Labor |
|---|---|---|
| 58 | New England-Maine | 35 |
| 68 | New England-Massachusetts | 39 |
| 75 | New England-Rhode Island | 46 |
| 72 | New England-Connecticut | 40 |
| 72 | New York Section | 44 |
| 64 | Delaware River Section | 38 |
| 58 | Baltimore Section | 34 |
| 65 | Southern-Hampton Roads | 30 |
| 67 | Southern-Wilmington | 20 |
| 77 | Southern-Charleston | 25 |
| 90 | South Atlantic-Savannah | 30 |
| 72 | South Atlantic-Florida | 30 |
| 72 | Gulf Section-Mobile | 30 |
| 75 | Gulf Section-New Orleans | 41 |
| 72 | Gulf Section-Texas | 30 |
| 65 | Great Lakes District | 35 |
| 72 | Pacific Coast-Puget Sound | 47 |
| 72 | Pacific Coast-San Francisco | 42 |
| 72 | Pacific Coast-South | 45 |
| 62 | Canadian Shipyards | 32 |
| 73 | United States Navy Yards | 41 |

In gathering data for the tabulation, the association discovered that there at least 211 plants in the United States and Canada engaged in shipbuilding, boat construction and repair work in the United States and Canada. If this number includes all plants actually at work, 639 have gone out of business, for no less than 850 were known to the association in 1919.

# Progress of Work

### Atlantic Launches

Bethore, ore and oil carrier Ore Steamship Company, Bethlehem Shipbuilding Corporation, Sparrows Point plant, December 3.

Concord, scout cruiser United States Navy, William Cramp & Sons Ship and Engine Building Works, December 15.

Missourian, motorship American-Hawaiian Steamship Company, Merchant Shipbuilding Corporation, December 14.

J. Hampton Moore, fireboat City of Philadelphia, Merchant Shipbuilding Corporation, December 20.

Steel Navigator (name changed from Steel Pioneer), freighter United States Steel Products Company, Federal Shipbuilding Company, December 17.

Macy Willis, tanker builder's account, Bethlehem Shipbuilding Corporation, Baltimore Drydock Plant, December 22.

### Atlantic Deliveries

Bay State, combination United States Shipping Board, New York Shipbuilding Corporation, November 18.

Dixie Arrow, tanker Standard Transportation Company of New York, New York Shipbuilding Corporation, November 29.

John Purroy Mitchell, fireboat City of New York, Standard Shipbuilding Corporation, November.

Tugboat Staples Transportation Company, Staten Island Shipbuilding Corporation, December 20.

Sea King, yacht Baron Bliss, Nova Scotia Steel & Coal Company, November 4.

Steel Seafarer, freighter United States Steel Products Company, Federal Shipbuilding Company, November 4.

Steel Scientist (name changed from Steel Pathfinder), freighter United States Steel Products Company, December 5.

### Pacific Deliveries

Mojave, cutter United States Coast Guard, Union Construction Company, December 12.

Canadian Britisher, freighter C. G. M. M., Prince Rupert Drydock & Engineering Company, November 15.

Princess Louise, combination Canadian Pacific Railway, Wallace Shipbuilding & Drydock Company, November 28.

### Atlantic and Gulf

**All navy yard work is suspended or is progressing slowly.**

**AMERICAN BRIDGE COMPANY, PITTSBURGH, PENN.**

Purchasing Agent: W. G. A. Millar.

Twenty-five coal barges Carnegie Steel Co; 175 LBP; 26 beam; 8 loaded draft; 24 launched, 23 delivered.

Two tow boat hulls Carnegie Steel Co; 149-2x34 4-5 loaded draft; launch and deliver Jan/22, est.

Fifteen decked barges, 120 LBP; 30 beam; 7 deep; US Engineers, Memphis, Tenn.

Two decked barges, undisclosed interests, 150x32x7-6; launch Mar/22, est.

Twelve sand barges, J. K. Davison & Bro., Pittsburgh, 135 x 26 x 10; launch Mar, Apr, May/22, est.

**BATH IRON WORKS, LTD., BATH, MAINE**

Purchasing Agent: John L. P. Burke.

Light vessel 106, hull 87, second-class light vessel US Dept of Commerce, 109-6 LBP, 30 beam, 14-4 loaded draft, 9½ speed; comp eng, 400 IHP; 2 Scotch boilers, 10-6 x 11-4; keel Apr1/22, est; launch Oct/22, est; deliver Dec/22, est.

Light vessel 107, hull 88, sister to above; keel May1/22, est; launch Nov/22, est; deliver Jan/23, est.

Light vessel 108, hull 89, sister to above; keel June1/22, est; launch Jan/23, est; deliver Mar/23, est.

Light vessel 109, hull 90; sister to above; keel July1/22, est; launch Mar/23, est; deliver Apr/23, est.

Light vessel 110, hull 91, sister to above; keel Aug1/22, est; launch May/23, est; deliver June/23, est.

**BETHLEHEM SHIPBUILD'G CORPORATION, BALTIMORE DRYDOCK PLANT, BALTIMORE**

A. C. Crosby, assistant general manager in charge of purchases.

Hull 125, tanker builder's account; 340 LBP; 49 beam; 23-6 loaded draft; 10 loaded speed; 6000 DWT; rec. eng, 2000 IHP; 2 Scotch boilers, 15-3; keel Nov24/20.

Macy Willis, hull 126, tanker builder's account; 430 LBP; 59 beam; 25-4½ loaded draft; 10 loaded speed; 10,250 DWT; turb eng, 3000 IHP; 3 Scotch boilers, 15-3; keel Sept27/20; launch Dec22/21.

Hull 128, fireboat City of Baltimore; 115-6 LBP; 28 beam; 9-6 loaded draft; 12 loaded speed; rec eng, 1000 IHP; 2 B&W WT boilers; keel July15/21; launch Oct22/21.

**BETHLEHEM SHIPBUILDING CORP., FORE RIVER PLANT, QUINCY, MASS.**

Lexington, hull 1300, battle-cruiser U S N.

Raleigh, hull 1382, scout cruiser U S N.

Detroit, hull 1383, scout cruiser U S N.

Massachusetts, hull 1400, battleship USN.

And the following nineteen submarines USN: AA-2, hull 1270; hulls 1309 to 1320 inc, submarines S-18 to S-29 inc; hulls 1389 to 1394 inc; submarines S-42 to S-47 inc.

J. Fletcher Farrell, hull 1496,

Pacific Marine Review
The National Magazine of Shipping

Columbian Wins in Supreme Test

On November 4th, three huge drydock pontoons were being towed by as many tugs, through the teeth of an eighty-mile gale on Long Island Sound. Furious seas crashing over decks added several thousand tons to the weight of the pontoons.

The storm increasing in violence, forced one of the tugs to port, then hawsers began to snap like overtaut violin strings. Tug *Peerless*, of Lee's Towing Line, using a 6″ Columbian *Tape-Marked* Manila Hawser held fast! Then came a tremendous lunge and two 16″ square towing timbers of seasoned Oregon pine snapped like tinder-wood and the released pontoon bounded away with astounding speed.

Peerless now despatched her last assistant to pursue the runaway and made both remaining pontoons fast astern her hawser. The storm, increasing in violence, took the entire tow full speed astern until a steamer providentially bearing up took a line from Peerless.

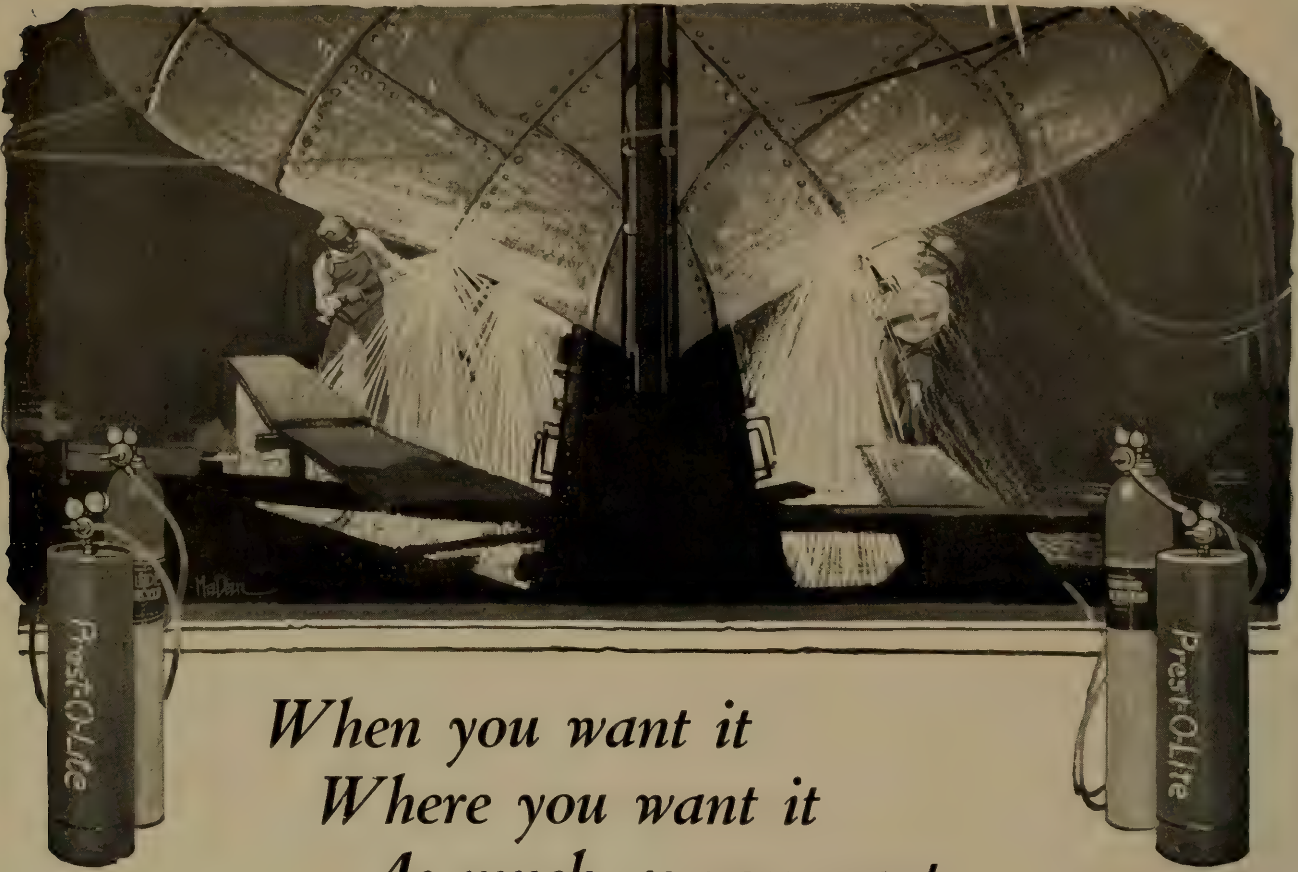
The 6″ Columbian *Tape-Marked* Hawser now held the tug and two pontoons astern the steamer which hauled the entire tow through the teeth of the raging storm into Newport. The two pontoons depending on the Columbian Hawser were saved.

Lee's Towing Line, Inc., write that "the *Tape-Marked* hawser is as good as new!"

BY INVITATION MEMBER OF
NEW YORK, U.S.A.

COLUMBIAN ROPE COMPANY
342-90 Genesee Street,
AUBURN, "*The Cordage City,*" NEW YORK
Branches: New York Chicago Boston Houston Baltimore

Pacific Marine Review, Vol. 19, No. 2. Published Monthly at San Francisco. Entered as second class matter at the post office at San Francisco under the Act of March 3, 1879. $3.00 a year.



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provides ship builders with the purest cutting and welding gas in easily portable, instantly accessible and highly convenient cylinders.

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And Prest-O-Lite Service, operating through forty plants and warehouses, places Prest-O-Lite Dissolved Acetylene at the command of ship-yards anywhere, at any time and in any desired quantity.

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PW-513-21

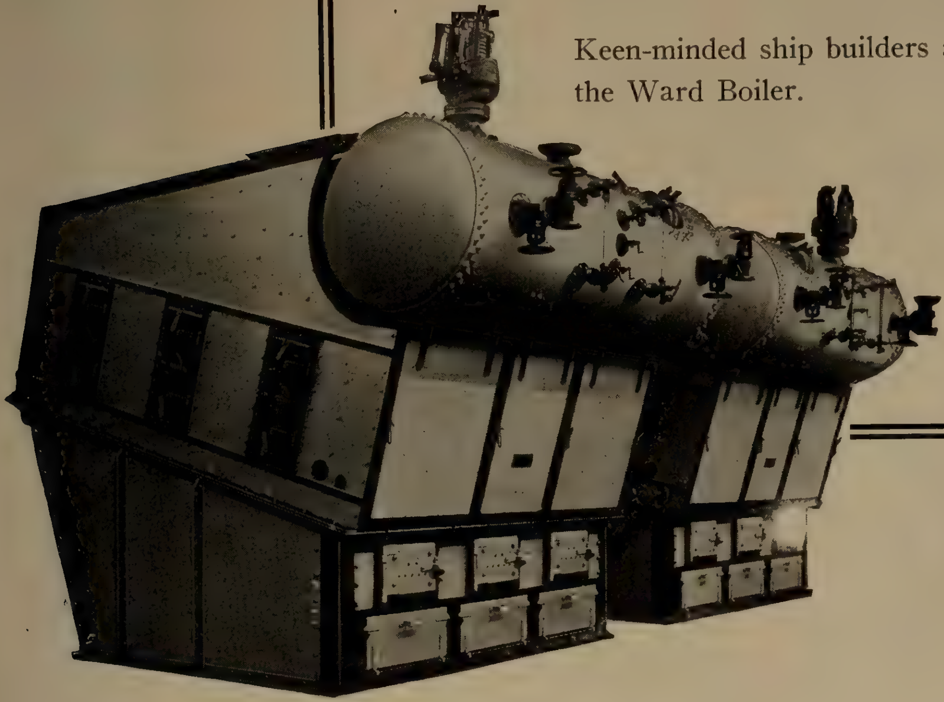
# Why Ward Boilers are Longer-lived

WARD Boiler construction is based on the design of experts who have had wide experience in this field.

Ward Boilers are fitted together, not merely sledged, hammered or riveted together. The headers are machined to take the I beam stiffeners; the large drum is fitted to the front header; stay bolts and nipple connections are entirely absent; the steel tubes are straight; rugged construction throughout.

Such features as these make the Ward Boilers free from strain, and consequently longer lived.

Keen-minded ship builders and owners insist on the Ward Boiler.



*May we send you a copy of the Ward Bulletin?*

**Ward Water Tube Boiler Features**

- Component parts of headers machined and fitted.
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- No stay bolts or nipple connections.
- Straight seamless steel generating tubes—easy to renew.
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- Positive circulation.
- Rapid evaporation — 16.73 pounds of water to one pound of fuel oil.

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**95 Liberty Street New York**

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The Charles Ward Engineering Works, Charleston, W. Va.

# WARD BOILERS

## WATERTUBE MARINE TYPE

FOSTER
ENGINEERING CO.

Main Office and Factory
NEWARK, NEW JERSEY

712 Harrison Bldg., Philadelphia, Pa.
1614 E. Fortieth St., Cleveland, Ohio
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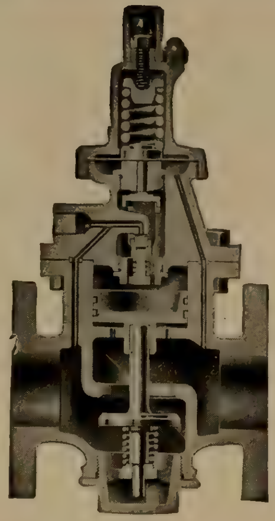
136 Federal St., Boston, Mass.

FOSTER PRESSURE
MARINE SERVICE
CLASS "G"
REGULATOR



for severe and exacting service requiring close regulation, particularly for intermittent work. Suitable for working pressure up to 250 pounds. Unlimited range on terminal side, from zero to within a small percentage of the initial pressure. It will operate in any position—upright, inverted or inclined at an angle.

AGENCIES:

Geo. G. Semans & Son........Pittsburgh, Pa.
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F. W. Hay & Co........Kansas City, Mo.
*The National Supply Co........Toledo, Ohio
*Sachelben & Co........St. Louis, Mo.
Grant Whittlesey........Elliott Square, Buffalo, N. Y.
W. R. Ladewig........Central Bldg., Los Angeles, Calif.
*Woodward, Wight & Co........New Orleans, La.
*W. K. Kiefaber Co........Dayton, Ohio

*Carry Stock

# Trade Literature

**The Hadfield-Penfield Steel Company, Bucyrus, Ohio,** have issued two catalogs describing and illustrating their Diesel type horizontal and vertical standard fuel oil engines. The engines are built on the 2-cycle principle with a crosshead which also serves as a pumping piston for furnishing air to clean out and fill the main working cylinder.

The horizontal engine is built in three sizes of cylinders and of 50, 75 and 100 B. H. P., the latter two sizes being built as twin units, giving 150 and 200 B. H. P.

The vertical engine is built in two cylinder sizes—50 and 125 B. H. P. per cylinder and in from two to six cylinder units.

---

**Chicago Pneumatic Products—Special Publication 674—Chicago Pneumatic Tool Company, New York.**

A 4-page bulletin featuring as a frontispiece the "famous Rafferty smile" and the pages back of that smile giving complete specifications in very handy reference form for the complete line of pneumatic tools.

---

**Chicago Pneumatic Dry Vacuum Pumps—Bulletin 710—Chicago Pneumatic Tool Company.**

This is the first edition of a new bulletin presenting a line of dry vacuum pumps, in which are incorporated several new features of design, together with the refinements dictated by twenty-five years of engine building experience.

This line of dry vacuum pumps is particularly suitable for heavy continuous service in industrial and power plants. Inlet valves have been eliminated, and through the use of the Simplate discharge valve clearance has been minimized. At the same time the design has been much simplified, and a smaller number of parts are used with consequent long life and ease of operation. The volumetric and mechanical efficiencies of these pumps under test have been proven to be as high as any known type of pump.

The bulletin describes and illustrates all the working parts, both in detail and in the assembled machine, and specifications are given for all of the usual sizes and capacities.

---

**Radial Wall Drill No. 6—Bulletin No. 206—Pawling & Harnischfeger Company, Milwaukee, Wisconsin.**

An 8-page bulletin describing a radial wall drill designed for drilling, reaming and countersinking operations on unusually large surface shapes, such as boiler plates, long beams and structural shapes.

The machine is so designed that it can be fastened conveniently either to the wall, to a post, or to a portable car. It is operated by a variable speed motor bolted to the upper end of the wall plate and driving the tool through spur and bevel of speed ratios and feed ratios to cover all classes of ordinary machine shop practice, with a spindle diameter of 1-15/16 inch, a horizontal spindle traverse of 10 feet 7 inches and a vertical jib traverse of 3 feet 3 inches. Complete specifications and dimensions of all working parts are given in the bulletin.

---

**Horizontal Boring, Drilling and Milling Machine—Bulletin No. 4F — Pawling & Harnischfeger Company.**

A 4-page bulletin describing a very convenient size of a well known boring mill built by this firm. One of the most noteworthy features of this mill is the fact that operating levers controlling every motion of the spindle, saddle and all of the other parts are concentrated within a circle of 20-inch radius so that the operator standing on the platform attached to the column of the machine can without shifting his feet control the entire operation.

**Centrifugal Pumps—Catalog 108C—Wheeler Condenser and Engineering Company, Carteret, New Jersey.**

This catalog of 65 pages bound in dark gray pressboard with red stampings describes and illustrates double suction, single stage, horizontal, vertical and multirotor types of centrifugal pumps as designed by Wheeler Condenser & Engineering

(Continued on page 57)

# Trade Literature

(Continued from Page 54)

Company for a very comprehensive and varied line of application.

Some very interesting data and theoretical considerations in regard to the use of centrifugal pumps in various industries are covered in a technical paper showing the use of characteristic curves of centrifugal pump performance. The mechanical details of the various parts of the Wheeler centrifugal pumps of all types are described in great detail. This catalog should be of great benefit to prospective users of centrifugal pumps.

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**Submarine Signaling — Submarine Signal Company, Boston, Massachusetts.**

A very interesting 35-page booklet bound in gray pressboard with black stampings describing the standard receiving apparatus manufactured by the Submarine Signal Company.

This apparatus consists of two small cast iron tanks filled with water and placed one on each side of the ship near the bow well below the waterline and firmly held against the inside skin of the ship. In each of these tanks are two microphones electrically connected with an indicator box in the pilot house or chart room. By listening in on telephone receivers attached to the indicator box the navigating officer gets the sound of any bell or other signal coming through the water before it would be audible to his ears coming through the air. By listening alternately on the port and starboard microphones he is able to determine from which direction the sound is coming and, if necessary, by maneuvering the ship can get the exact bearings of the sound.

This apparatus has been found very useful in picking up submarine bell signals, and after investigation in 1906 the British Admiralty made the statement that "if the light-vessels around the coast were fitted with submarine bells, it would be possible for ships fitted with this receiving apparatus to navigate in fog with almost as great certainty as in clear weather."

A great proportion of the vessels built by the United States Shipping Board has been fitted with the Submarine Signal Company's system, and directions have been given by the board that all steel ships owned by it should be so equipped. Seventeen hundred and thirty-eight ships, exclusive of Navy vessels, are now equipped with this apparatus. Ten hundred and twenty-eight naval vessels are so equipped, and many of the most prominent steamship lines have adopted this system as standard.

The Submarine Signal Company also controls another system using the Fessenden oscillator in sending out electro-magnetic under-water signals, and it has been found that this system is very efficient in enabling navigators to avoid the risk of collision where both ships are fitted with the system. The company proposes shortly to issue another bulletin fully describing this second system.

---

**What Does She Weigh?—Crandall Engineering Company, East Boston, Massachusetts.**

A very convenient booklet of 18 pages giving a concise and simple explanation of the various uses of tonnage measurement in ships and the method of determining the docking weight of any hull and also an interesting monograph on drydock essentials, on marine railways, and on floating drydocks.

**World-Wide Wireless—Radio Corporation of America.**

A very attractive 25-page brochure bound in buff pressboard with dark brown stampings describing the Radio Central, the world's largest and most powerful wireless telegraph station, which is located near Port Jefferson, Long Island, 70 miles from New York City. In another section of this issue of Pacific Marine Review a full description of this station will be found.

The site covers 6400 acres, and when finished there will be 12 antenna units, each of which consists of six towers 1250 feet apart supporting sixteen silicon bronze cables ⅜-inch in diameter. Each of these transmitting units will have a sending speed of 100 words per minute with sufficient power behind the transmitter to send a message around the world.

Accuracy!

When we first started to make gauges, away back in 1851, we selected the word **Accuracy** as our manufacturing slogan. Unwavering adherence to that policy is responsible today for the universal reputation for reliable performance that attaches to American Gauges.

When you install an American Gauge you know that it will prove dependable because you know that it is conscientiously as well as scientifically built.

American Gauges respond with **infallible accuracy** to every pressure variation.

At every point, **ACCURACY.** And along with Accuracy, the durability that assures long service.

Our Catalog No. 70 gives other interesting facts that you ought to know. Write for it today.

**American Steam Gauge & Valve Mfg. Co.**

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HULL AND ENGINE

Contractors for some of the largest Repair Jobs Ever Done at the Port of Portland.

Drydock Facilities Ample for Vessels up to 15,000 Tons.

**Albina Engine and Machine Works**

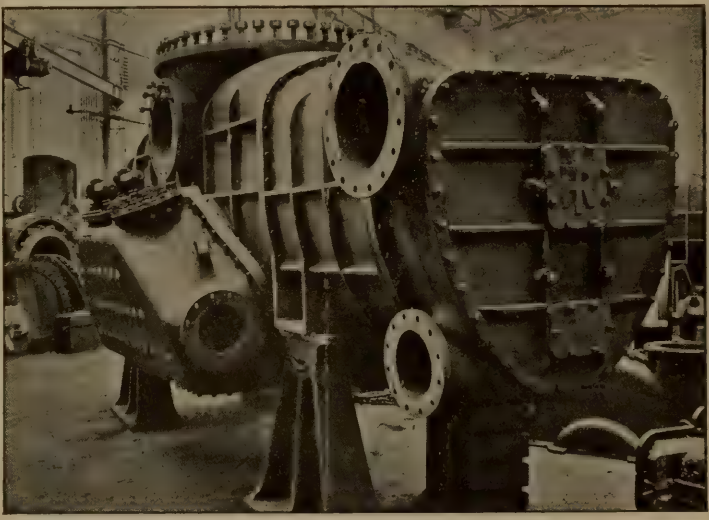
PORTLAND OREGON

# INGERSOLL-RAND SURFACE CONDENSERS

SURFACE condensers are usually installed where the water available is unsuitable or unsafe for boiler feed and, while great benefits are secured for the boiler, the tube troubles are transferred to the condenser. These troubles are of two kinds: corrosion, requiring continuous attention to leaky tubes which pollute the condensate and finally necessitate the expense of tube renewals; and, secondly, fouling of tubes by scale or slime which causes reduction in the average operating vacuum. Particular advantages in reducing and eliminating these tube evils are claimed for the new Ingersoll-Rand line of condensers. The improvements in design may be briefly summed up as elimination of waste tubes, maintenance of uniformly-high condensate temperature, counter-current air cooling; and last, but of great importance, the retardation of fouling and corrosion.

The fundamental characteristic of the I-R design is the elimination of waste tubes. This is secured by arranging the tubes in "stages," by correct shell shape, and by the use of a separate devaporizer-cooler. The tubes, spaced on wide centers in the top of the shell, are brought closer together in each lower bank or stage. The shell itself is gradually narrowed from its width at the top to that of a nozzle running the length of the shell under the last row of tubes, giving it the characteristic heart-shaped section. Sufficiently high steam velocities to sweep condensate and air films from the tubes are maintained throughout the condenser, by this construction, which compensates for the decreased volume of the steam as it is condensed in its passage down over the tubes. The residual air and steam from the last row of tubes is drawn up into the cooler which is mounted on the side of the shell proper and fitted with cast iron cooling grids whose surfaces are particularly adapted to devaporize and cool the air before it passes to the vacuum pump. The withdrawal of the non-condensibles at the bottom of the shell and the use of a multi-stage tube arrangement and correct shell shape insures an active flow of steam over every tube and precludes the possibility of pocketing and stagnation. The elimination of waste tubes in this way represents a large saving in maintenance and renewal costs.

A condenser with active steam flow over every tube not only results in a reduced total surface requirement, but also has the advantages of maintaining a uniformly high condensate temperature by keeping the condensate from all tubes in contact with active steam. The devaporizing and cooling of the air is carried on independently in the cooler, through which the flow is upward to the vacuum pump or steam jets. The air can thus be cooled to a low temperature without corresponding lowering of the condensate temperature.



Ingersoll-Rand surface condenser from inlet water-box end. At the left is the cooler mounted on shell

Proper steam distribution, while of primary importance, affects only the outside of the tubes. Conditions at the inside wall also have an important bearing on the operation of the condenser. The greatest operating cost chargeable to most surface condensers is loss of vacuum by the accumulation of scale or slime on the inside of the tubes. Some condensers lose one inch of vacuum in a week, representing 5 to 8 per cent loss in turbine economy. The loss of coal due to low vacuum is often many times the entire auxiliary power consumption.

This loss can be reduced by the use of high water velocities and a suitable tube diameter, to promote activity of flow and reduce the temperature at the inner tube walls. These conditions are readily obtained in the I-R condenser by a single-pass arrangement, which makes high velocities possible without excessive friction. The highest velocities are obtained through the upper and most active tubes through which the greater part of the water is pumped directly. The remainder of the water is first passed through the cooler and then through the bottom tubes at a somewhat lower velocity. High water velocities improve the rate of heat transfer and effect a further reduction in the amount of surface needed.

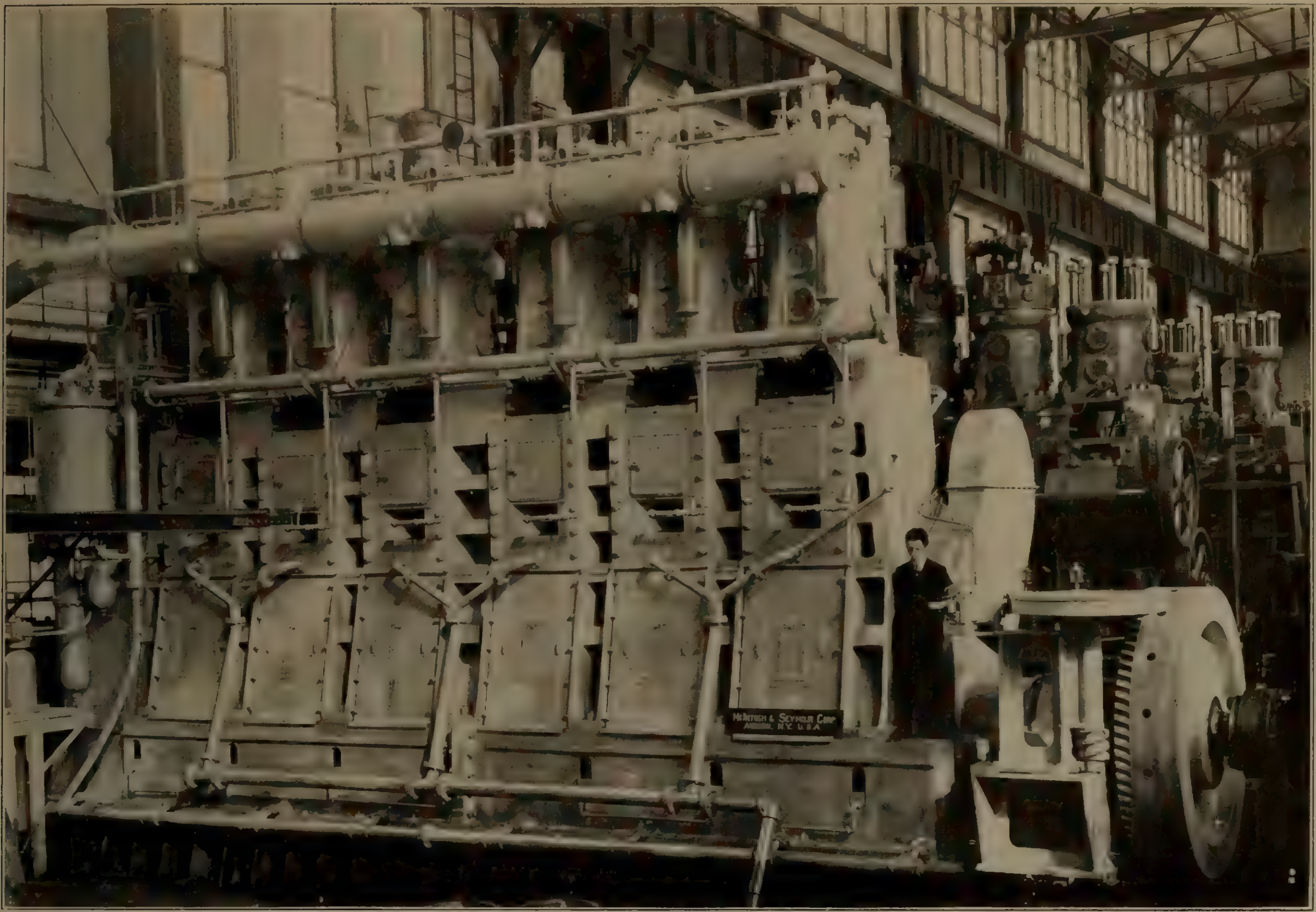
Corrosion troubles and maintenance expense, minimized by the elimination of waste tubes, are further reduced by preventing excessive heating of the water at the inner skin of the tubes. It is well known that all corrosive action is accelerated by warmth and retarded by cold. High water velocities and ample water quantities reduce the heating at the inner skin, where corrosive action takes place.

Corrosion is most severe in summer when the water is naturally warm to start with; fouling also goes on more rapidly with warm water and, unfortunately, this is the time when an efficient condenser is most needed in order to maintain a high vacuum. High water velocity and full water quantity are therefore particularly needed in summer.

On the other hand, in winter these troubles are less acute and a reduction in the quantity of water used saves auxiliary power and reduces refrigeration of the condensate. Variable circulation water capacity is therefore frequently desirable and the Ingersoll-Rand Company recommends a variable speed motor or turbine drive, or else the use of two pumps. With twin pumps a single induction motor can be used if desired and the water quantity reduced in winter by uncoupling one pump. When driving but one pump the power consumption of the motor will be reduced by half, due to the flat efficiency characteristic of modern motors.

Ingersoll-Rand surface condensers are furnished with high vacuum reciprocating or steam jet vacuum pumps. When the latter are used the primary jets are mounted on the air cooler and discharge into an intercondenser forming part of the cooler proper. The complete compression is accomplished in two stages, secondary ejectors being used to remove the air from the intercondenser under reduced vacuum and discharge it to atmosphere. To operate efficiently the steam jet used in an injector must expose a large surface to the incoming air, since compression is only secured through entrainment. In the I-R ejector this requirement is fulfilled by projecting the steam in the form of a hollow cylinder and entrainment is accomplished by both the inner and the outer surface. In many cases a small reciprocating vacuum pump is used in place of secondary jets. It may be selected of a size to serve several condensers, each being fitted with both primary and secondary jets, the secondaries serving as standbys. A better plant heat balance is often secured by driving this pump with an electric motor.

The above is an abstract of a paper on "Steam Condensing Plants" read before the Baltimore Section, A. S. M. E., May 16, 1921, by Paul Bancel. This paper, which contains much valuable data, has been reprinted by the Ingersoll-Rand Company, 11 Broadway, New York, and is now available for distribution.



The above picture shows one of our 1200 I. H. P. Directly Reversible Marine Engines on the test floor. A pair of these engines have been installed on the M/S "KENNECOTT."

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**McINTOSH & SEYMOUR CORPORATION**

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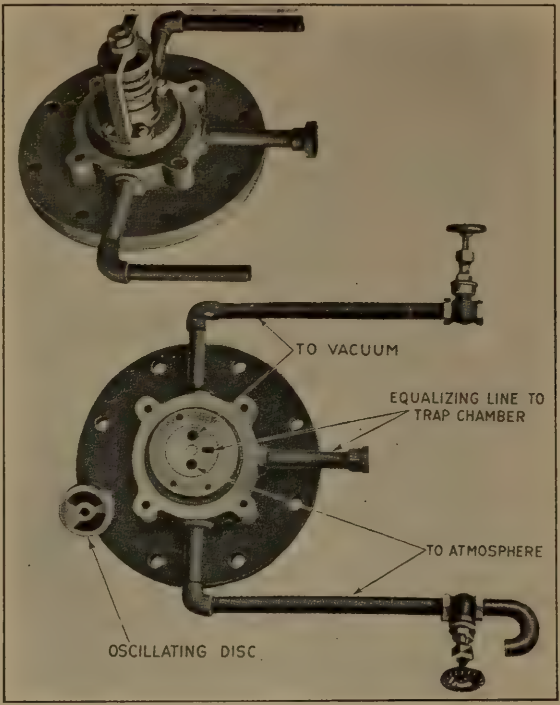
# THE WILMON VACUUM TRAP

THE novel vacuum trap shown in the illustration was first perfected during the war and applied on the S. S. Leviathan by the then chief engineer, Commander Vaughn V. Woodward, U. S. Navy, as a means for draining the two low-pressure turbines, replacing the customary main air pump drainage of these two large engines.

The trap is also suitable for draining apparatus and systems using steam under vacuum, such as condensers, evaporators, vacuum pans, cooking kettles, etc., and for returning condensation of live steam heating systems to the boilers. Its use in place of a float controlled condensate pump is often practical and with a consequent elimination of the steam requirement for operating the pump.

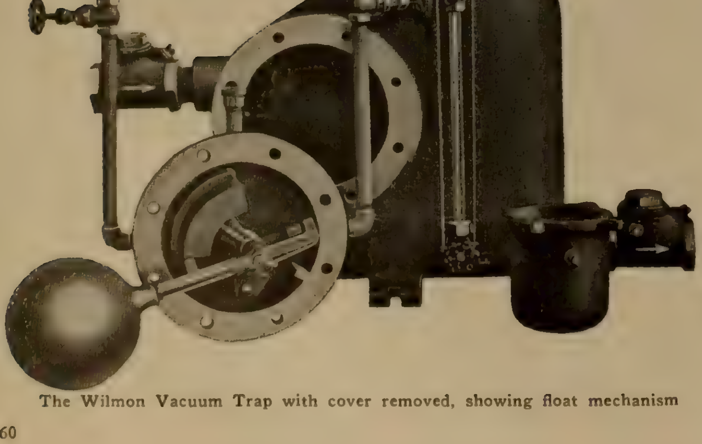
The Wilmon vacuum pump, as it is called, can also be used for lifting, and when equipped with a counting device, it will perform the additional function of a meter and with greater precision.

Typical drainage of a steam turbine with the delivery of the condensate at a higher point of discharge is shown in the line cut. In marine installations, where the common practice is to drain the turbine directly into the main air pump, hot vapors must enter the air pump during a part of the time and thereby impair the vacuum. By the use of the Wilmon trap the turbine drains can be removed entirely from the main air pump and placed through the trap into the condenser, thereby insuring that no hot vapors enter the air pump to interfere with the vacuum.



Details of trap cover, showing oscillating disc and connections to vacuum and atmosphere

With the exception of the cover bolts, this trap has but thirteen parts, and by removing eight tap bolts the entire working mechanism, mounted on a flange, can be taken out as a unit.



The Wilmon Vacuum Trap with cover removed, showing float mechanism

A compound pressure gauge on top and a sight glass on the front give a double check on the operation of the trap. Where a permanent record of the operation of the trap is desired, a recording gauge with electrical contacts may be added.

The receiving chamber of the trap is under vacuum while the water is collecting in the trap, and under atmospheric pressure during discharge. Back flow is prevented by check valves on the inlet and outlet lines.

Change of pressure in the receiving chamber from vacuum to atmospheric and vice versa is accomplished by an oscillating disc covering three ports, which makes a quick shift from one operating position to the other. One of these positions connects the receiving chamber with the vacuum system, and the other position connects the chamber with the atmospheric line, the communication being effected in both instances through the equaling line which connects the middle port to a top opening in the receiving chamber.

The disc and thrust bearing and the spring which holds these parts in place are in a separate outer chamber, where they are never in contact with the liquid within the receiving chamber. The disc is operated by a lever float, hammer weight and rocker arm, all on the same shaft and located within the receiving chamber.

Water entering the receiving chamber carries the float upward as the lever rises, and a contact point on the float stem, between the float and its fulcrum, rotates the weight, until as the latter passes dead center it drops onto the contact point on the rocker arm and partially rotates the oscillating disc to the opposite position. This shuts off the vacuum line and opens the receiving chamber to atmospheric pressure through the atmospheric and equalizing lines. Water is then forced through the trap outlet, if the latter is connected to a vacuum, or drains by gravity if connected to atmosphere. As the float falls with the water level the contact point beyond the fulcrum on the float stem lifts the weight past dead center and lets it drop in the opposite direction, when it hits the opposite end of the rocker arm and shifts the disc. This cuts off the atmospheric line, connects the vacuum and equalizing lines and brings the receiving chamber under vacuum again. The cycle repeats at a rate determined by the amount of water accumulating. More than three discharges per minute have been obtained with perfect action. The disc requires no adjustment either before trap installation or during service, but may be seen and reached while the

(Continued on page 64)

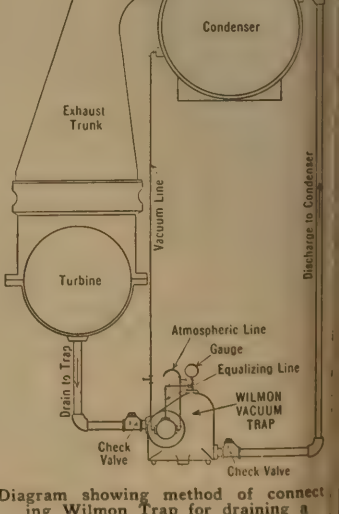
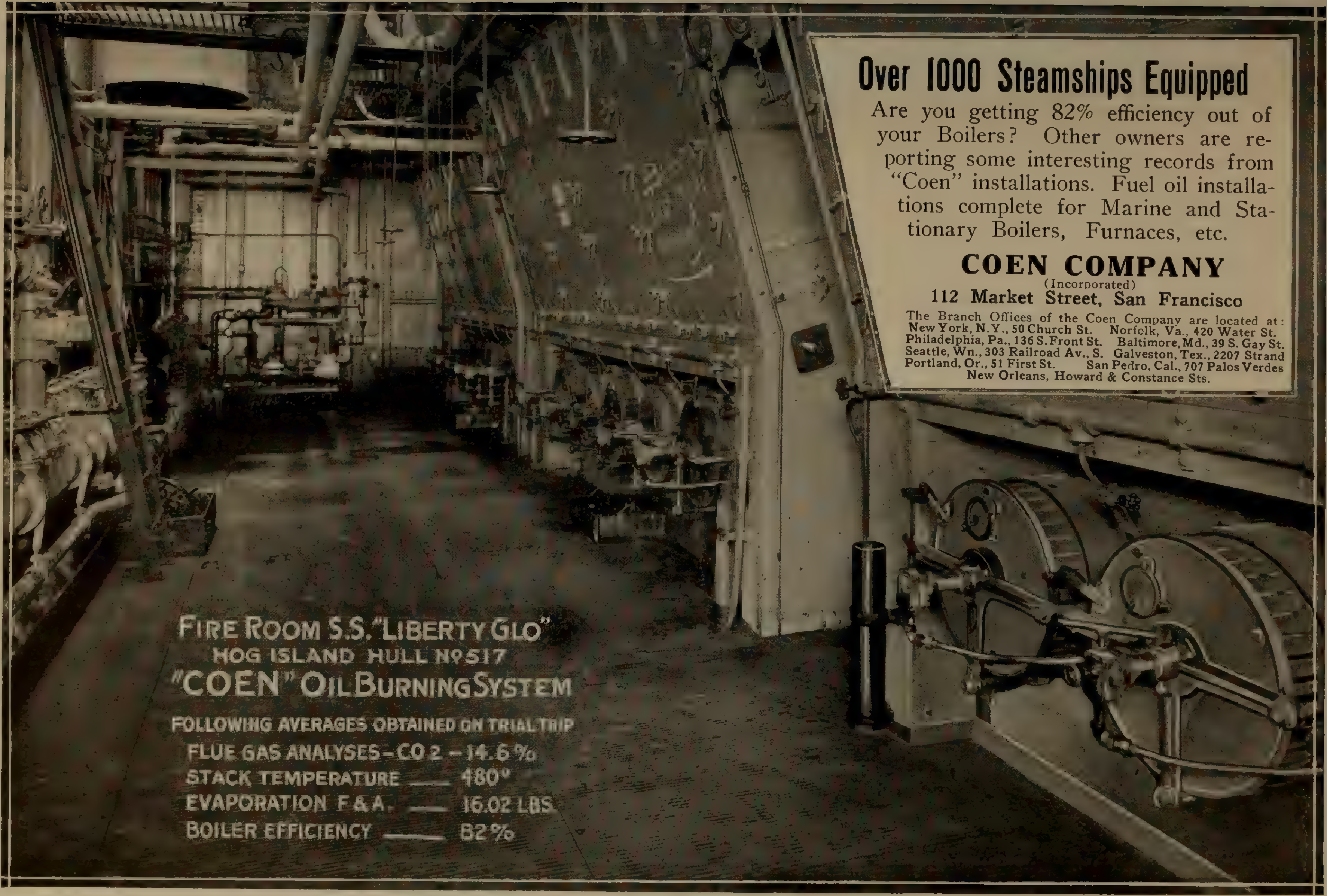


Diagram showing method of connecting Wilmon Trap for draining a steam turbine installation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Are you getting 82% efficiency out of your Boilers? Other owners are reporting some interesting records from "Coen" installations. Fuel oil installations complete for Marine and Stationary Boilers, Furnaces, etc.

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# Power Available for Every Lifting Job

TO provide an electric hoist for every load-lifting job, small as well as large, is the purpose of the Liftabout, a small general utility hoist recently announced by the Shepard Electric Crane and Hoist Company of Montour Falls, New York.

The possible uses of the Liftabout are well suggested in its name, for it can be applied to advantage in lifting most anything and carrying it most any place.

Heretofore many have been under the impression that an electric hoist could be used economically only for the big, heavy rehandling jobs and that it was not adaptable to small work.

The Liftabout is particularly designed and suited not only to usual lifting jobs encountered in factories, mills and warehouses, but also for more specialized jobs in apartment houses handling ashes, in ice plants pulling the heavy cranes, in slaughter houses expediting the kill and in garages raising chassis. Wherever hand labor is now employed on any job of lifting, carrying and putting down, the Liftabout affords a new and far more economical means for doing the work.

Shepard LiftAbout handling ashes on steam-ferry Ellis Island

In use the Liftabout is most versatile, for it can be operated wherever electric current is available and is easily installed on the side of a building, on the ceiling of a basement, or at any point that will bear the weight of a load. One man—any man—can run a Liftabout and with it he can do the work of many, much more rapidly and with far greater efficiency. On most any load-moving job the saving in time and labor effected by this machine will quickly refund its modest initial cost.

In developing and marketing this product the Shepard company has undoubtedly broadened the field where electric hoists may be effectively applied.

# Announcement of Publications on the Ports of the United States

### By A. H. RITTER

Chief Statistician, U. S. Board of Engineers for Rivers and Harbors

IN co-operation with the Shipping Board the Board of Engineers for Rivers and Harbors of the War Department now has in preparation a series of reports on the ports of the United States. The scope of these reports will far surpass that of any previous publications on similar subjects. The investigation covers about seventy ports, embracing a series of approximately thirty-five volumes.

These reports will contain all information needed by a vessel desiring to call at the port and will enable a shipper to compare the advantages of one port or route with another for the particular business in which he is interested. They will describe the port and harbor conditions, port regulations and charges, and will give detailed information regarding every terminal at the port. Full data will be included regarding drydocks, the facilities at the port for the repair of vessels, coal and oil bunkering facilities, grain elevators, storage warehouses, bulk freight storage, floating equipment, wrecking and salvage equipment, etc. Information will also be given regarding the railroads communicating with the port and their charges and practices in connection with terminal service. Likewise full information will be given regarding steamship lines serving the port.

The reports will contain a complete analysis of existing commerce, with the origin and destination of the commodities and the area served by the port, and will prove useful in determining the feasibility of establishing and maintaining vessel service under profitable operating conditions. A study is being made of the traffic conditions at each port, which includes an examination of the freight rate situation as affecting the ability of the port to obtain the kind and amount of traffic needed to attract vessels. Based upon the results of the study of physical and economic conditions, recommendations are embodied in the report for such changes as may appear desirable to enable the port to function to best advantage in the interests of the country, and to establish at the port conditions favorable for the successful operation of American merchant vessels.

The reports will contain maps showing the facilities of the port and the territory served by it. A unique feature will be a large aerial photograph or "mosaic" of each port made especially for these publications by the Air Service of the Army.

In seeking to ascertain the conditions which are restricting the free flow of our commerce, the study properly begins with the ports, for here are to be found the chief obstacles to the continuous movement of traffic. The port is one link in a transportation system, generally it is the weakest link, and that which first fails in time of emergency. Congestion on rail lines is usually an unavoidable extension of congestion at ports. The burden placed upon our commerce by such congestion justifies the government in exercising its utmost authority and influence to remedy the situation.

The study of our ports is also bringing to light conditions which are preventing the commensurate use of navigation facilities provided by the United States, and making it difficult for vessels to operate successfully. In some cases it is found that the use of a well-equipped port is retarded by excessive rail or water rates to and from the port, or by local charges or practices which place the port at a disadvantage as compared with its competitors. In other cases the business of the port is restricted through the existence of physical conditions disadvantageous to vessels, including the lack of terminal facilities of the kind especially needed for the accommodation of general shipping business. With the completion of the port series and the related study of traffic movements, the United States will for the first time be in possession of information fror which a clear picture can b drawn of our national transportation system and constructive action taken to secure economy in the movement of our commerce whicl is alike indispensable to th producer, the consumer, an the carriers.

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(Continued from page 60)

trap is in operation withou in any way interfering witl the trap action.

The absence of liquids a the controlling ports permit salty or alkaline water to b handled without fear of salt ing or eroding the operatin mechanism.

The fact that the liqui passes through no restricte passages gives the trap very high capacity, which i limited only by the size the inlet and outlet opening of the trap. The two-inc trap, for instance, handl 1800 to 2100 gallons of wate per minute. This capacit will vary depending on th lift of the discharge.

The Wilmon vacuum tra is manufactured by P. H. Gi & Sons Forge & Machi Works, Brooklyn, New Yor

# TREND IN PASSENGER SHIP DESIGN

(Continued from page 64, Editorial Section)

| Speed at sea (knots) | S. H. P. | Total deadweight | Cargo deadweight | Oil fuel, one way (tons) | Fuel cost, one way |
|---|---|---|---|---|---|
| 15 | 16,000 | 29,000 | 26,500 | 1,450 | $26,100 |
| 20 | 38,000 | 23,000 | 19,400 | 2,550 | 45,900 |
| 25 | 73,000 | 14,000 | 9,000 | 3,900 | 70,200 |
| 30 | 113,000 | 5,800 | .......... | 5,000 | 90,000 |

Such a vessel would carry some 600 first, 450 second and 1000 third-class passengers and would be quite big enough for speeds all the way to 30 knots. It is seen that the 30-knot ship carries nothing but passengers, mails, stores and bunkers, which is the logical outcome of this investigation.

Oil fuel is figured at six cents a gallon or $18 a ton; a figure which, of course, is subject to variation. It would be well to pursue this further, but the above table will show that, with cargo capacity falling from 26,500 tons to nothing and fuel costs rising from $26,100 per voyage to $90,000, the economics of the large ship are not easy. It is clear, however, that the greater number of voyages per year for the 30-knot ship must also be taken into account. This may be summarized somewhat as follows:

| Speed of ship (knots) | Days at sea, one way | Days in port, at each end | Days for single trip | Single trips per year | Passengers per year, at 85% full | Cargo (tons) per year |
|---|---|---|---|---|---|---|
| 15 | 8-1/3 | 9 | 17-1/3 | 17.3 | 30,270 | 3,897,000 |
| 20 | 6-1/4 | 7 | 13-1/4 | 22.6 | 39,550 | 3,726,500 |
| 25 | 5 | 5 | 10 | 30 | 52,500 | 229,500 |
| 30 | 4-1/6 | 3 | 7-1/6 | 42 | 73,500 | ................ |

The days in port are somewhat indeterminate, due to uncertainty in time necessary to load and unload. The times given are estimates only and are subject to change to suit terminal conditions; they should be fairly close. Allowance has been made for docking, overhaul, etc., also passengers and cargo are taken at only 85 per cent full, averaged over the whole year.

A maximum speed-length ratio of unity has been a general guidance rule for ocean passenger ships for many years. With lighter machinery, oil fuel and other advances, the speed question again becomes one for renewed study and discussion.

The following table shows the fuel savings possible for high speed, moderate dimensioned vessels:

| Length of ship, feet | S.H.P. at 25 knots | S.H.P. at 30 knots |
|---|---|---|
| 600 | 56,000 | 137,000 |
| 700 | 64,000 | 119,000 |
| 800 | 68,000 | 131,000 |
| 900 | 80,500 | 153,000 |
| 1000 | 91,000 | 163,000 |

These figures represent smooth-water powers plus 10 per cent for the 25-knotters and plus 15 per cent for the 30-knotters. The dimensions dependent on length follow average merchant practice, except that the beam on the 1000-footer has been limited to suit the Panama Canal lock dimensions to 102 feet.

It is clear from this table that a Mauretania at 30 knots would bear out Sir William White when he says that no greater length is necessary.

Destroyers attain a speed-length ratio of 2.00, but it cannot be claimed that they attain it with comfort and safety except in quite moderate weather. European cross-channel steamers obtain a ratio of 1.50 with greater safety and comfort than destroyers; where the line must be drawn for the North Atlantic is our problem. The ships listed above cover a range of from 1.225 for the 600-footer to 0.95 for the 1000-footer at 30 knots. The Mauretania's figure is 0.95. From this it is submitted that the 750-foot ship of 30 knots as proposed above in this paragraph is practicable, providing the fore ends of the ship and of the midship deck erections are especially designed and strengthened, with a view to avoiding deck damage in weather not otherwise severe enough to make slowing up necessary. All fittings and deck openings forward of the bridge would need to be of special design.

The table above for varying lengths is calculated on a somewhat different basis from that given at the beginning of this paragraph, somewhat different proportions, coefficients and powers. The two tables were prepared from different angles but remain substantially comparable.

The question of powers to be expected if very fast liners of warship types were to be adopted is interesting and is another angle of the question that should be investigated. The table of powers varying with length and speed given above covers merchant types developed from current liner practice; the following covers some of the ground as indicated to us by warship practice.

The proportions and speed both render large and high deck houses out of the question; the passage would be short and promenades would have to be arranged on the quarter deck aft and on one deck amidships well protected from spray.

The speed has been taken at a 20 per cent advance on previous general practice; the time on a 3000-mile run in moderate weather is also given. In the powers given a 10 per cent margin for sea speed is allowed over a measured mile performance. The bunkers work out at quite large figures. It can be assumed that oil fuel is obligatory; coal handling would be well-nigh impossible both on board and alongside. These bunker capacities are high, but not impractical. Taking only first-class passengers and allowing 1½ per foot of length, we get the numbers given in the table. The longitudinal coefficient is 0.58 and the mid area 0.90 for all lengths.

It is seen that the increase from 29 to 36½ knots cuts one day off the voyage. As said elsewhere, this branch of passenger-ship design is most fascinating; full plans, however, involve an amount of work beyond the scope of this paper, and it is hoped that these few remarks will be of interest as well as of some value. It is submitted that a full design along the lines of recent experience in battle-cruiser and aircraft carrier practice is worth while.

As regards weights, it is clear that warship practice rather than merchant would have to be followed for machinery design; the absence of armor, torpedo protection; battery and ammunition weights being utilized on deck erections, passenger accommodations and bunkers.

It must be remembered that some of the British battle-cruisers during the war made successful passages of the Northern Atlantic at a very high rate of speed. Particulars of these voyages, made during the war, are not generally known, but it is safe to say that valuable information was obtained thereby.

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# Pacific Marine Review

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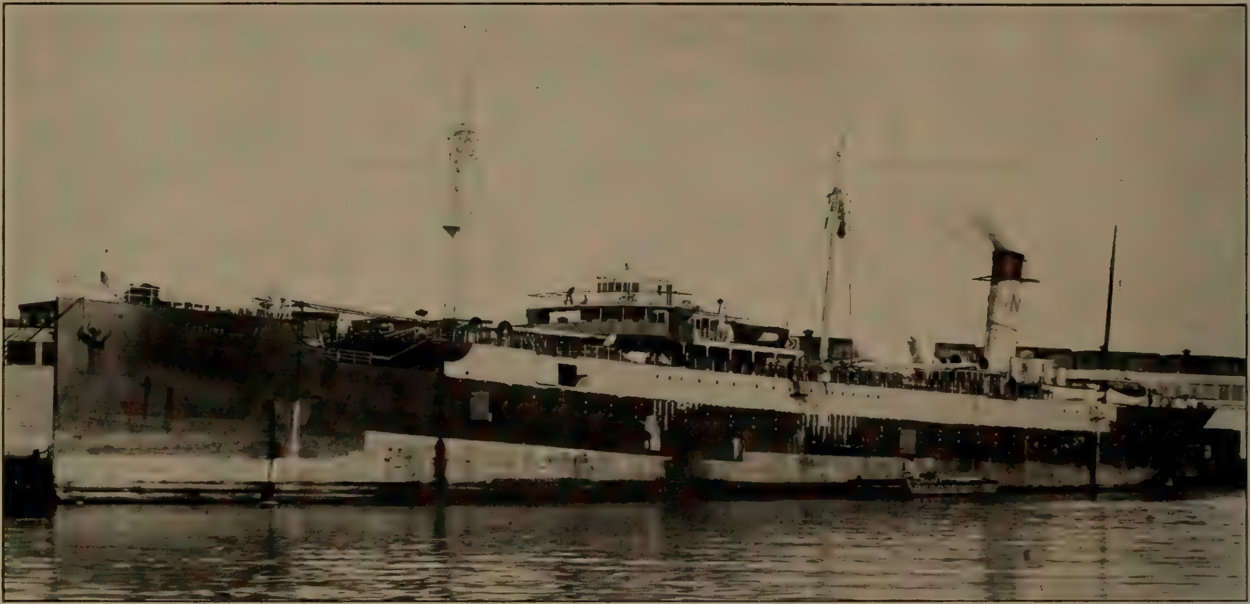

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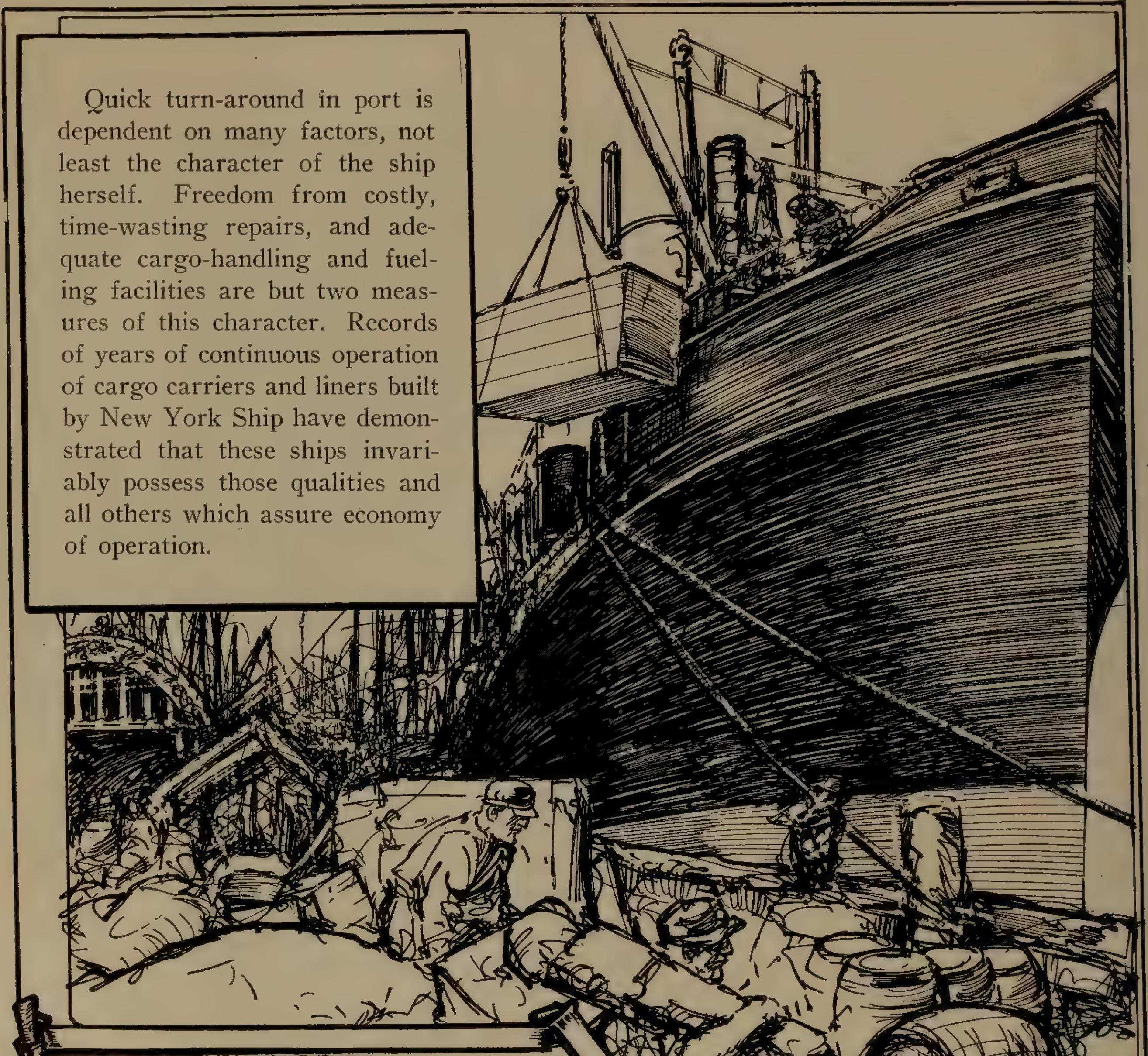
President Emergency Fleet Corporation United States Shipping Board

Joseph Wright Powell was born in Oswego, New York, February 15, 1877. His family had been American farmers and lawyers for many generations. He is a graduate of Annapolis, with post-graduate work in naval construction and architecture, both at Annapolis and at Glasgow University.

After two years at New York Navy Yard he was appointed inspector at Cramp's yard, and subsequently leaving the Navy was engaged as assistant to the president at Cramp's. In 1914 he became president of the Fore River Shipbuilding Corporation, and then vice-president of Bethlehem Shipbuilding Corporation. During the war program 70,000 men and over fifty shipbuilding ways were under Mr. Powell's direction. He severed his connection with Bethlehem March 31, 1921, and was making his home in Quincy, Massachusetts, when called to his present work.

# CHARACTER · CRAFTSMANSHIP · SERVICE



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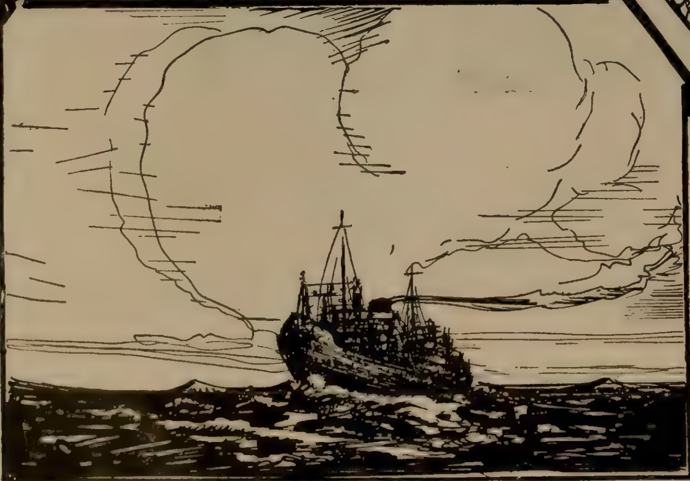

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**NEW YORK SHIPBUILDING CORPORATION**

Pacific Marine Review

The National Magazine of Shipping

*February, 1922*

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# THE HANDWRITING ON THE WALL

## The Proposed Ship Subsidy in the Light of American Marine Lethargy and Foreign Marine Progressiveness

By R. R. MONTELL
Consulting Engineer

CAN the American merchant marine be made successful simply by a subsidy? Let us examine the conditions. The Merchant Marine Act of June 5, 1920, says "Be it enacted . . . that it is necessary for the national defense and for the proper growth of its foreign and domestic commerce that the United States shall have a merchant marine of the **best equipped and most suitable type** of vessels, . . . ultimately to be owned and operated privately by citizens of the United States, . . . **it is hereby declared the policy of the United States** to do whatever may be necessary **to develop and encourage the maintenance of such a merchant marine.** . . ."

And in Section 11; construction loan fund: "Such vessels shall be equipped with the **most modern, the most efficient, and the most economical machinery** and commercial appliances."

### How This Law Has Been Applied

Albert D. Lasker, chairman of the United States Shipping Board addressing the Society of Naval Architects and Marine Engineers in New York November 19, 1921:

" . . . Today this country finds between one-third and one-fourth of the privately owned vessels of its fleet and two-thirds of its government owned fleet swinging idly at anchor or moored with smokeless funnels at their docks. . . . Figures prepared in September showed that only about 40 per cent of our exports were carried in American ships. . . ."

"For a nation with 10,000,000 tons of shipping lying idle, this is not a record to be proud of."

Remember these three basic facts: (1) the law, (2) the 10,000,000 tons of idle shipping, (3) the 40 per cent of our exports carried in American ships.

### Corresponding Condition in Foreign Shipping

Item in Seattle press December 3:

"The Nippon Yusen Kaisha, Ltd., on November 28 declared a dividend of 20 per cent for the six months period ending September 30."

This brand of stagnation appears highly instructive.

And from Denmark in Motorship of September, 1921:

"The Burmeister & Wain yard is swamped with orders and is working three shifts, building motorships and Diesel engines exclusively."

This is stagnation with a vengeance. If the poor Danes are so hard up for ships, why not sell them some of our idle steamers?

Recent statement by Seattle shipping man:

"The foreign motorships have carried grain from Seattle to U. K. for 26 shillings. We cannot operate our steamers under 60 shillings without loss." Remember this fact. We shall return to it presently.

Lloyd's report describes the present British stagnation as follows:

"Forty-seven motorships aggregating 229,325 gross tons are building in Great Britain." Is there perhaps a connection between this information and the following recent item from the Seattle press:

"London, December 2: Rates from England to the United States and Canadian Pacific Coast ports will be cut in half, so that a ton of British goods may be shipped 9000 miles through the Panama Canal and delivered at West Coast points for $5. . . They believe that by making such a rate they will be able to get eastbound business from the Pacific Coast and the Western States. . . ."

Some connection must indeed exist, as will be noted by this item from Seattle Marine News of recent date:

"Work on four new 14,000 ton motorships for the Seattle-European service of the Royal Mail Steam Packet Company is being rushed. The first of the quartet will sail from London for Seattle the latter part of January. Each vessel has 2000 tons of refrigerating space and limited accommodations for first-class passengers." Is the persistent occurrence of the word "motorship" in foreign marine news a coincidence, or is it possible that it carries a hidden significance?

We must not forget our friends the French, and therefore quote this recent item from our marine pages:

"French concern buys wooden motorship Balcatta."

Enough! When a French shipping firm, in this day of cheap steam tonnage of every description, at prices from $30 per ton up for comparatively new steamers, purchases a wooden motorship from Seattle, the accent must be on the "motor" and not on the "wood."

### Advantages of Motorships

No attempt will be made to go into technical details or to give the history of the development of the motorship. These are the **facts:**

Given two vessels of identical dimensions and speed, a modern oil-burning steamer and a motorship, in the same trade with the same cargoes, then the difference in their respective economies is as follows:

(1) The motorship consumes 75 **per cent less fuel** than the steamer; (2) the saving in bunker space, absence of boiler, and lesser weight of machinery permits the motorship to carry 10-12 per cent more cargo than the steamer; (3) firemen and watertenders are eliminated, and the motorship carries **six to eight men less in the crew;** (4) 40 per cent reserve power in motorship against 10 per cent for steamer; (5) no racing of propellers in heavy weather for the motorship;

(6) instant starting of motorship against 8 to 12 hours working up steam; (7) a clean ship and a cool engine room, no smoke or heat with the motorship; (8) and last but not least, the motorship needs filling of bunkers twice a year only, in the home port, instead of depending on foreign fueling stations, and this without carrying more bunker space than the steamer which must replenish the bunkers six to seven times a year and cannot possibly avoid doing so in foreign ports—with attendant disadvantages.

### Application to the Idle Fleet

If the idle fleet of 10,000,000 tons were equipped with Diesel engines, and if they were to operate one year in the usual world trades, the results would be as follows: Assuming that the average tonnage is 5000 deadweight, there would be 2000 ships, each carrying a minimum of 500 tons additional cargo each way on at least three round trips, 3000 tons more per ship per year and 6,000,000 tons more cargo carried in one year by the whole fleet. In labor, the annual saving per ship would be 2190 days, and for the whole 4,380,000 days. If the average power is 1800 I. H. P., the steamer's daily consumption is 26 net tons and the motorship 6.5 net tons, a saving of 19.5 tons of oil per day, 4387 tons per ship per year and 8,774,000 tons per year for the whole fleet of 2000 ships!—based on 225 days per year at sea as an average, and neglecting the consumption in port, which would greatly increase the difference in favor of the motorship. Over 8,000,000 tons of oil, over $80,000,000 a year potential saving in this item alone, and we are still installing steam and bemoaning the increasing fuel shortage! If tonnage is worth only $5, the 6,000,000 tons wasted would earn $30,000,000. If labor, including provisions, is valued at $100 a month, the wasted labor is equal to $14,000,000—a total possible saving of $124,000,000 a year, and we continue talking and thinking steam, while the French purchase the Balcatta. Shipping Board after Shipping Board passes into innocuous desuetude, each one giving us a few more steamers, while the British and the Scandinavians make a motorship drive for our Northwest trade and the Danes work three shifts. Are we to subsidize our fleet to cover this difference?

"False alarm;"—"mere theory;"—"propaganda for some machine shop turning out Diesel engines;"—"all right in theory but does not work in practice;"—"cannot secure any reliable Diesel engines anyway, and if we could, we cannot get anybody to run them;"—"if motorships really were better than steamers, the Shipping Board would have adopted them;"—"the few foreign motorships are only experiments, all right for small ships but they will never take the place of steam."

These are the most common American objections to the motorship. As to the objections, more anon. And the Shipping Board? Similar to the girls who were trying to think of a suitable present: First girl—"I have it; let's give her a book." Second girl—"Oh, no, she has one." The Shipping Board actually has ordered, built and now operate one motorship, so why worry?

But in the meantime, the handwriting on the wall remains, becomes more plain, legible and menacing month by month, spreads by leaps and bounds and fills not only one wall but four walls, and is overflowing to the floor and ceiling.

### Summary of World's Motorship Activities

(1) There are at present 500,000 tons under construction in foreign yards, in addition to 2,000,000 tons of motorships already afloat and busily engaged in all the principal world trades, and foreign shipowners are increasing their motorship fleets as fast as they can do so. (2) Motorships have repeatedly made forty-day non-stop runs, a performance never duplicated by any steamer. (3) The Diesel engines have proved so reliable that this year has seen a new policy inaugurated among the European shipowners, single Diesel installations instead of twin installations. (4) Reams of authentic data are available to prove by facts, figures and logbooks that the Diesel engine not only costs no more to maintain than the steam engine, but in a great number of cases it costs less, that its mechanical reliability has been a matter of record for fifteen years, and that motorships have circled the world trip after trip, year after year, without as many or as long stops for engine repairs as the average steamer.

The American critics are answered.

### The Shipping Boards

It is admitted that the present Shipping Board has been in existence only a relatively short time, and came into office during a trying period, inheriting the results of the crimes committed by their predecessors. However, the present board has had sufficient time to do something about the three basic facts—the law, the idle tonnage, and the exports in foreign bottoms—but nothing has been done, while the handwriting on the wall remains.

In his report of 1919, Franklin K. Lane, then Secretary of the Interior, said:

"I submit that there should be justification shown for the construction of any oil-burning ship which does not use an engine of the Diesel type. . . . No other one thing that can be done by the government, our industries or the people, will save us so much oil from being wasted and thereby multiply the real production of the United States. . . . The matter is of too great moment for delay. . . ."

Nothing was done.

On January 9, 1920, Thomas Orchard Lisle, editor of Motorship of New York and Seattle, by request of the United States Senate Committee on Commerce, prepared a report on the motorship and the Diesel engine. (See Motorship of March, 1920.) He recommended the immediate construction of fifty to one hundred 10,000 to 12,500-ton freighters and tankers, and of three 16-knot Diesel powered express freighters. Thomas Orchard Lisle proved his case very ably, but nothing was done. Later on, Italy did it. And so on. Pages could be filled with Shipping Board obstructions, stubborn refusal to listen to experts recognized as such by even the foreign nations, with neglect of the opportunity of a century, but this is enough: the Shipping Board has one motor vessel.

### Private Operators

The privately-owned American motorship fleet consists of a couple of tankers, some small coastwise ships and the Alaska Steamship Company's motorship Kennecott. The American-Hawaiian Steamship Company is an exception and has ordered two large motorships. The privately-owned American motorship fleet does not exist. The foreign fleet totals 2,500,000 tons.

### American Diesel Engine Builders

There are at least six firms in the United States building Diesel engines on European licenses, and several firms building them from their own design, among them one building a successful engine of large size. The American builders of Diesel engines have incurred heavy expenses to equip themselves for this work, with no encouragement except the handwriting on the wall and the belief that the unbelievable state of affairs in the United States cannot exist very long, but that Shipping Board and private owners for their own protection cannot fail to order Diesel engines "in another month or so." All in vain. One manufacturer who saw the handwriting on the wall very early, before we entered the war, began building Diesel engines on a large scale. When we entered the war the Shipping Board promptly stopped him and ordered him to convert his Diesel engine plant into one for turning out steam engines.

The law has been ignored. It is very plain: "**The best equipped and most suitable** type of vessels . . . to **develop** and **encourage** the maintenance of such a merchant marine. . . ."

### The American Public

The American public today is not "shipminded" (excellent term coined by Ralph E. Cropley in Pacific Marine Review of May, 1919). We are not a maritime nation, like Great Britain; we are neither concerned nor interested in the subject in the least. And we cannot be turned into a maritime nation merely by passing a law about it even if a number of political corn-fed sailors proclaim it ever so loudly. History is about to repeat itself: in 1861 the United States had 5,482,127 tons of deep-sea shipping, Great Britain 5,895,395 tons. We competed with the British in their own territory, and we were within an inch of marine supremacy. Then things began to happen. In twenty years we carried only 24 per cent of our foreign trade, in another twenty years the share had dropped to 12 per cent, and in 1914 we carried only 9.7 per cent in our own bottoms; the balance was carried by foreign vessels. Why? (1) Because the iron steamships arrived and we did not see the opportunity but tried to compete with our clipper ships. (2) Strangling government regulations and lack of support drove us from the seven seas. The British admit today that their concentration on the iron steamer and their wise maritime laws saved them in the nick of time from being retired as the mistress of the seas. We lost our shipmindedness and our national consciousness, and turned into a society for exploitation of a continent.

The same thing is happening now, point for point: (1) We neglected the opportunity of a century, offered by the Diesel engine, which today is saving Great Britain's fleet. Read the British marine press and there will remain no doubt of that point. (2) We are not only maintaining the old handicapping American marine regulations but imposing worse new ones in the form of the Seamen's Law, strangling legislation handicapping our foreign trades, etc. Our merchant marine rusts at the moorings, 10,000,000 tons of it eliminated from the world trades, and we are not even shipminded enough to worry about it; most of us do not even know it. This time, though, there is a difference, mark it well, and ponder over it: there is no continent left to exploit. This time there is nothing to take the place of the ships.

### The Proposed Subsidy

President Harding, in an earnest effort to bring order out of our maritime chaos, has announced that some form of a subsidy will be worked out in order to enable our merchant marine to meet the foreign handicap. This is the first constructive action taken since the inauguration of our new "marine policy", and the President should receive every possible support and co-operation from our maritime interest in order that the inland states may not arise in wrath at the word "subsidy" and kill the effort as in the past.

Before we can assist the President, we must know all the facts in the case. We must know what the handicaps are in order that we may either assist in eliminating them or take our medicine and decide that it is too late.

There are numerous handicaps to American marine operation.

Can these handicaps be eliminated by subsidies? What is their total amount in dollars and cents per deadweight ton per month in comparison with a foreign privately-operated motorship? In the light of past experience, can these matters be safely left with Congress and the Shipping Board, or should we do something about it at once, and what?

In order to apply engineering principles, necessary for the solution of all similar problems, we must have all the facts before us before we can analyze them and recommend such action as the analysis may indicate.

With this end in view we will compare an American 10,000-ton oil-burning steamer with a British motorship of the same size, analyzing these handicaps and reducing them, so far as possible, to dollars and cents. The result will enable us to determine the amount of the subsidy required, after deducting such handicaps as can be eliminated by prompt legislation.

### Antiquated and Wasteful Power

We have already noted that the handicap is threefold: lower cargo capacity, higher fuel consumption, and larger crew. For the American oil-burning triple expansion 10,000-ton deadweight steamer and the British motorship of equal dimensions, the comparison is as follows:

**Cargo Capacity.**—Owing to lighter weight of machinery and lower fuel consumption, the motorship carries 10 per cent more cargo, or 1000 tons on each trip. The average number of round trips per year on four of the principal trade routes is 3.4, and the motorship consequently carries 6800 tons a year in excess of the steamer. However, if we use the lowest possible basis of comparison, the present average time charter rate of $1.20 per deadweight ton per month, now equal to the rate early in 1914, we are concerned only with the 1000-ton excess capacity, and the annual saving in favor of the motorship is therefore $14,400 per year.

**Fuel Consumption.**—If both vessels have 4000 indicated horsepower, giving them a speed of 11½ to 12 knots, the steamer will in twenty-four hours consume 57 net tons of oil at $11.20, equal to $638.40, the motorship 14 net tons at $18.80, equal to $263.20, a daily saving of $375.20. The average runs on four of the principal trade routes show 225 days at sea, 130 days in port, loading and unloading, and 10 days for overhauling and repairs. The saving during 225 days at sea is therefore $84,420. In port the steamer will use 3½ tons per day at $11.20, equal to $39.20; the motorship will use 1¼ tons at $18.80, or $23.50, a daily saving of $15.70, and for 130 days in port an annual saving of $2041. Total saving in port and at sea per year, $86,461.

It should be noted that we have given the steamer the benefit by charging the motorship with the most expensive Diesel oil at $18.80 a ton, whereas most of the low revolution marine Diesel engines can easily use the heavier and low-priced grades of fuel oil.

**Crew.**—The motorship requires no firemen and water-tenders, six men less in the crew, equal to an annual saving of $5580 in wages. They will also have to be fed, and at the usual $1.30 per man per day for this item the amount is $2847 per year. Total saving in crew and provisions is therefore $8427 a year. It should be noted that we have again given the steamer the benefit, as the motorship generally saves eight men instead of six.

The grand total of the handicap due to antiquated machinery is therefore $14,400 plus $86,461 plus $8427, or $109,288 per annum, or $0.91 per deadweight ton per month—75 per cent of the present time charter rate of $1.20.

Are we to subsidize our antiquated steamers for this handicap? Not in a thousand years. At any rate, not until we subsidize our farmers for plowing with a crooked stick.

### Higher Initial Cost of Vessels

In 1919 Great Britain had about 10,000,000 gross tons of pre-war ships costing ten to twelve pounds per ton. Taking into account seized tonnage and the extent of the British merchant fleet today, it is conservatively estimated that about one-third of this fleet is new at a war cost of thirty pounds. The average cost of the British fleet would hence be about eighteen pounds, say ninety dollars per ton. If we increase this average price by five dollars to give them a further benefit in the comparison and to cover renewals and replacements in the old ships, we arrive at an average cost of ninety-five dollars per ton deadweight as the present average cost of the British merchant fleet.

When ascertaining the average cost of the American merchant fleet, it is useless to consider pre-war tonnage. There are practically none except war cost ships, and the average cost of the whole fleet is about $225 per deadweight ton. It is not generally known that the American war losses were nearly double the British losses, in per cent, but this was due to the fact that Britain's pre-war gross tonnage totaled 18,877,000 and ours 724,800. The British lost 47 per cent and the American losses were 73 per cent of the pre-war figures.

### Higher Cost of Insurance and Depreciation

The average marine insurance rate is 5 per cent, the average life of a vessel is twenty years, and the depreciation hence 5 per cent.

The American 10,000-ton steamer costing $2,250,000 must meet a fixed charge of 10 per cent, or $225,000, against a British fixed charge of 10 per cent on a value of $950,000, or $95,000! A handicap of $130,000, alone sufficient to render competition impossible. If the American vessel operated at cost, the British vessel would still make a profit of 10 per cent. Should this item be covered by the subsidy? No; the difference in cost should be charged to war expenses and the ship re-valued at market price per ton deadweight, both on the books of the Shipping Board and when disposed of or chartered to private owners. However, the subsidy must cover future construction for private owners in the United States, and the difference in cost should be ascertained from time to time, with a construction subsidy granted, depending on the difference. We are in the main concerned only with the operating subsidy in this article.

### Higher Taxes

The Treasury ruling considers as excess profits any reserve fund over 3 per cent, if set aside for depreciation, and taxes the private shipowners accordingly. In Japan, the shipowner is permitted to set aside any amount for depreciation. Five and 6 per cent, and even higher, are common depreciations among European shipowners. The counties in which some of our largest port cities are located impose a tax on ships equal to the tax on real property, in one case a year ago equal to 72 mills on 50 per cent of the valuation of the ship. Is there a better proof of the fact that the country has lost its sense of proportion and values in maritime matters? Foreign nations make all sorts of concessions in the matter of taxes and pay a subsidy in addition. We tax our private shipowners "clear off the map". Owing to the fact that the exact amount of taxes paid by the British motorship owners is unknown, no accurate comparison can be given at this time. However, we are on the side of safety if we conservatively neglect the county taxes which fortunately are not uniformly as absurd as in the example above, and on the basis of the Treasury ruling alone fix the handicap against the American vessel at $10,000, which is the approximate amount of the excess profit tax on the difference between 5 and 3 per cent on the American value of $225 per ton. That this item will not be corrected by a subsidy is of course plain. Legislation is required. Taxation must be at par with the competitors.

### Higher Cost of Capital

In the days of the clipper ships, property in New England was synonymous with ship shares. Real estate had not reached the importance it now occupies. These conditions still prevail in old England. It is estimated that every third Englishman is directly or indirectly financially interested in ships and shipping. While with us a ship has not even been considered as security, and is heavily penalized in all financial transactions; with cash as the usual basis, the British shipping men have the benefit of low rates of interest, a ready market for their securities, long time loans, and public support. Furthermore, the British government has granted 2¾ per cent long time loans to at least one large British shipping company, and the Belgian government lends to the shipping companies at 3 per cent. But as these loans properly may be classed as subsidies, we will ignore them in this connection. It is reasonable to estimate the American handicap to not less than 1 per cent on one-half of the capital tied up in his ship, which amount is conservatively assumed also to cover the handicap due to paying higher interest on his operating capital. Total amount of $11,125 per year, or in round numbers $10,000. There is no reason why this item should be covered by a subsidy, when proper legislation can remedy it.

### Higher Cost of Repairs, Stores and Provisions

A close study of the annual cost of these items was made in 1918, covering three British and three American tankers, on similar trades and under equal conditions. The American tankers, operated by the Standard Oil Company of New Jersey, averaged 11,570 tons and the British 11,500 tons deadweight capacity. The result of the investigation showed that the American cost exceeded the British by $0.60 per deadweight ton per month, which for a 10,000-ton ship would give $72,000 per year as the American handicap. While nothing has since occurred to alter the relative costs under British and American management, the general cost of living and doing business has declined about 40 per cent, as shown by Bradstreet's index of 100 commodities. This decrease applied to the annual handicap of $72,000 in 1918 will reduce it to $40,000 at present, a conservative figure.

A subsidy to cover this item cannot be avoided. Ship chandlers, drydocks and wholesale grocers cannot be legislated into selling the American shipowners at bargain prices. With a reasonable leeway for economy in management and elimination of waste, which cannot be subsidized, it is probably justifiable to fix the subsidy at 85 per cent of the handicap, or $34,000. This is the first subsidy.

### Larger Crews

We have previously covered the handicap due to the difference between engine-room crews in steam and motor ships. But there is in addition a difference of eight men between the balance of the respective crews, with the American pay roll greater by $639 a month or $7608 a year.

This is another item which must not be subsidized at any cost. There is no reason why we should not carry the same crews as the British and all other maritime nations.

### Higher Wages

Item from Seattle press early in December this year: ". . . vessels flying foreign flags have failed to maintain the established level of wages and were employing seamen at rates approximately one-third of the Shipping Board scale. . . ."

Correct except for the fact that an agreement is implied. There has never been one.

In 1920 the Seattle Journal of Commerce published the following monthly wages paid on vessels of same tonnage under various flags: Japanese, $1124.50; Canadian, $2303; British, $3645; and American, $6711.

The American Steamship Association made a careful comparison between the payrolls of American, British and Scandinavian ships. It should be noted that at the time the comparison was made, the British were still paying their sailors a bonus, which is included in the comparison but which was soon eliminated.

The result of the investigation proved that in a 10,000 to 12,000-ton ship the American payroll was $2937 per month higher than the British for the same number of men in equal positions, disregarding the eight additional men in the American crew. In the light of recent payrolls, this figure must be considered very conservative, and will therefore be used here, giving an annual handicap of $35,200 against the American ship.

Regrettable as it is, this handicap is here to stay, and it requires a subsidy. Owing to the fact that we are not shipminded, the sea offers no attraction, and we must pay a heavy bonus to induce good men to attach themselves to the marine payroll. An additional reason is furnished by the fact that foreign shipowners can use Oriental crews, and as the comparison was based on white men, it must be more unfavorable with Orientals. It is no doubt unnecessary to subsidize the private owner to the extent of 80 per cent of this handicap. This is subsidy No. 2—$28,000 a year.

### Seamen's Bill

The less said about this feature the better. To thoroughly expose all the handicaps imposed on the American merchant marine by this law would consume more space than we can allot to it in this article.

A law which gives a special privilege to the sailor, frees him from all contract obligation, puts a premium on desertion in foreign ports, makes it possible for a single disgruntled sailor to tie up the ship for days, adds useless and ornamental members to the crew, imposes a staggering overtime payroll in addition to an already excessive basic payroll, etc., must without any political jockeying be repealed at once in all details where it differs from the laws of our competitors if we are to take our merchant marine seriously.

Partial progress has been made in adjusting the ruinous overtime pay, which in some services has been 20 per cent in addition to the payroll, but enough handicap remains.

Search the records of every steamship company in the Pacific trade, and delays in port from one to four days due to the Seamen's Law will be found too frequently to be dismissed as accidents. The expense due to this legalized sabotage has been enormous. It is difficult to reduce the handicap to dollars and cents, but any operator will agree that $5000 a year for a 10,000-ton steamer is a very low figure, giving the Seamen's Law more than the benefit of the doubt.

No subsidies here; we must have a new Seamen's Law which puts us on the map, not off.

### More stringent inspection laws, antiquated and handicapping measuring rules, increased requirements of certificates for officers and crew, making fewer men available.

The steamboat inspection depends too much on the individual ideas of the inspectors, is too costly to the owner in its results, and should be so changed as to be uniform in every port. There is no reason why the service should not be transferred to the American Bureau of Shipping.

The measuring laws are positively absurd. Quoting Mr. Cropley in Pacific Marine Review of June, 1920:

"There is the case of the Charlton Hall. Under British registry she had a net tonnage of 2999 tons. Transferred to the American flag her net tonnage became 4168 tons, a difference of 1169. Of course the increase was purely theoretical. Yet, as an American ship, she paid about $1402.80 more toll passing through the Suez Canal than she did as a British ship. This is not because American ships are charged a high rate of toll. It is only because our antiquated and absurd maritime rules and regulations require the net tonnage to be estimated as no other nation does."

All harbor dues, port charges and canal tolls are based on the net registry tonnage, and our shipowners must annually throw away large sums which could have been saved long ago by a simple act of legislation.

If an American manufacturer of cotton goods, largely for the foreign market, with a keen competition in this export market from a British firm, calls in the experts of the British firm to write his specifications and leaves to British experts the inspection, acceptance or rejection of the product, his sanity would be seriously questioned. Yet in 1919 we class 470 vessels with British Lloyd's. How can we create a more efficient ship than our competitor if we deliberately hand him our plans for acceptance or rejection and abide by all his rules? The American Bureau of Shipping is fully capable of rendering the same service and must be encouraged by law.

Increased requirements of certificates for officers and crew make fewer men available, and should also be eliminated, and regulations be made to conform with those of our competitors.

That inspection, measurements, registry and certificates impose a financial handicap is admitted by all operators. No tangible basis exists for expressing this in accurate figures, and $3000 a year is submitted as the lowest reasonable estimate for the 10,000-ton steamer. No subsidies permitted here; new laws required, and at once.

### American traders handicapped by strangling American laws, directly affecting American shipping; lack of colonies, fueling stations, investments abroad, lack of co-operation by government, banks, manufacturers, exporters and shipowners, directly affecting shipping.

This is no dissertation on the troubles of the foreign trader, but it is necessary to include these handicaps since they do exist. That they result in a financial handicap for the American vessel is admitted. What boots it us to have ships if we have no foreign trade organization to secure us cargoes? Or if our few existing foreign traders abroad are unable to compete with other nations owing to our strangling laws? The fundamental facts are very simple: (1) trade follows profit; (2) profit creates cargoes; (3) cargoes maintain a merchant marine. The most conservative estimate we can make is the assumption that the American vessels secure at least 15 per cent less revenue producing cargo than the organized and favored foreign competitors, owing to the absence of active American foreign traders and investments abroad, backed by government and nation. At three round-trips a year this amounts to 9000 tons lost cargo annually. At a net profit per ton of only $1.40, this represents a loss of $12,600 a year, say $12,000.

These conditions will prevail for years to come, even if some of the most glaring foreign trade handicaps are removed by more intelligent laws. A sudsidy is necessary here, and at least one-third of the loss must be so covered, say a subsidy of $4000 a year for the 10,000-ton American vessel. This is our third unavoidable subsidy.

### Foreign Subsidies

Reference has already been made to the 2¾ and 3 per cent loans granted shipowners by Great Britain and Belgium, and this difference in interest can properly be classed as a subsidy.

France paid an average subsidy of 2,500,000 pounds sterling per year from 1901 to 1911; Japan paid at that time about 1,400,000 pounds sterling. Italy pays a construction subsidy of 2 pounds 4 shillings per gross ton and 12 shillings per indicated horsepower. Spain pays a construction subsidy of 6 pounds 8d. per gross ton and an operating subsidy of 50 centimes per gross ton per 1000 miles, diminishing after the fifth year, etc. (For details, see Pacific Marine Review of December, 1918.)

We have already seen that a separate subsidy must be granted the American builder to cover the difference in the cost of future construction, and an additional subsidy must be granted to meet the foreign construction bonus, based on the above data. Future expansion must be neglected here, as we are concerned with existing vessels. We will use the known average foreign construction bonus, divided into the life of the vessel, in order to reduce it to annual basis, and add an average operating bonus based on a known equivalent abroad, also considering the loans at low interest for construction and operation. This will give us an approximate minimum subsidy of $23,000 per year for the American 10,000-ton ship on equal basis with the foreign fleet. This is subsidy No. 4—$23,000 a year for any 10,000-ton American vessel.

> **American self-sufficiency and indifference, lack of shipmindedness, ignorance of conditions affecting the country's prosperity and safety, and politics.**

We will here make the greatest concession as yet made in this analysis of handicaps, and beyond calling attention to the fact that this class of handicaps does exist and is sufficiently serious to be considered, we will not attempt to reduce them to dollars and cents, but leave that problem to the reader's own imagination and judgment.

### Summary

| | |
|---|---|
| Total annual handicap of American 10,000-ton deadweight steamer compared with British motorship of same dimensions | $ 385,000.00 |
| Annual loss for 10,000,000-ton fleet, if operated under prevailing conditions | 385,000,000.00 |
| Annual subsidy required to place any 10,000-ton American vessel on equal basis with foreign vessels, even if all handicapping laws are changed | 89,000.00 |
| Handicap per deadweight ton per month, 10,000-ton steamer | 3.20 |
| Subsidy per deadweight ton per month, required for any American vessel | 0.74 |

The American handicap of $3.20 per deadweight ton per month plus the present time charter rate of $1.20 gives the required American rate of $4.40 which must be secured in order that our shipowners be placed on equal basis with the foreign motorship operators.

We have already learned that foreign motorships have carried grain from Northwest Pacific ports to Europe at 26 shillings, presumably at a profit, and that our steamship operators cannot break even at a lower rate than 60 shillings.

The relation between earnings and rates are not the same for trip charter and time charter, and a direct comparison can therefore not be made between the grain rates and the derived American time charter rate. But if we assume that the foreign rate of 26 shillings includes a reasonable profit, ascertain the number of round trips possible a year, make allowances for partial return cargoes, and apply the difference between 60 shillings without profit and 26 with profit to the number of tons carried per year, we will find that a handicap of $3.20 per deadweight ton per month is conservative, and this analysis can therefore be accepted as reasonably correct since it is verified by known facts.

Those critics of this article who are inclined to reject the whole on the condemnation of some unimportant detail will do well to observe that the essence of it is not the insistence on the accuracy of some individual estimate, but a systematic construction of that fundamental skeleton which must exist in order that results may be obtained by filling it out with future accurate details and acting as their summation dictates.

# SHIP SALES, SUBSIDIES, SYNDICATES

## Recommendations to the United States Shipping Board by the American Merchant Marine Joint Committee

**Before a great gathering of maritime economists, shipbuilders, ship owners, ship operators and marine labor organizations, held in Washington January 6, 1922, H. H. Raymond of New York, chairman of the American Merchant Marine Joint Committee, presented to Albert D. Lasker, chairman of the United States Shipping Board, and to the board's special Committee on Government Aid to Merchant Ships, the recommendations of his group for a ship subsidy.**

**The Shipping Board Committee on Government Aid to Merchant Shipping is composed of the following: Commissioner Meyer Lissner, chairman; Dr. Emory R. Johnson, University of Pennsylvania; Winthrop L. Marvin, American Steamship Owners' Association; Rear Admiral H. H. Rousseau, U. S. N.; Rear Admiral Clarence S. Williams, U. S. N.; Daniel H. Cox, special representative United States Shipping Board; Grosvenor M. Jones; M. B. Beecher; John Nicholson; R. T. Merrill; W. L. Clark.**

**The American Merchant Marine Joint Committee includes the following well known ship owners, shipbuilders and shipping men: H. H. Raymond, chairman; Frank C. Munson, W. A. Harriman, J. R. Gordon, H. F. Alexander, Homer L. Ferguson, Antonio C. Pessano, H. E. Lewis, Henry C. Hunter, Charles H. Potter, Clifford D. Mallory, W. D. Benson, Albert R. Lafonta, Matthew Hale.**

As consideration of the question of the national policies in aid of the merchant marine on the part of advisory committees of the Shipping Board has reached such a point of forwardness, it seems to the American Merchant Marine Joint Committee that our mutual purpose can best be served by specific expressions of opinion on the tentative memoranda already presented by one of the advisory committees to the Shipping Board. These memoranda deal first with indirect and then with direct aid to the merchant marine.

Section 1 of the recommendations in question is:

1. "Ship sales. The Shipping Board should sell its remaining fleet as rapidly as possible, at prices not to exceed the prevailing world market prices for similar tonnage."

This the American Merchant Marine Joint Committee approves, with the additional recommendation that "we believe that the most liberal terms and period of payment should be provided, and we suggest that interest be charged on the purchases at a rate of not less than 2 per cent."

In this connection it is our belief that many of the restrictions now contained in Section 5 of the Jones Act as to the method of making sales should be modified, in order to permit this sales policy to be carried into effect—for example, public sales, after advertisement, should be eliminated as unnecessary, and there should be no further restrictions as to prices than the prevailing world market price. Experience has amply demonstrated that these emergency-built ships cannot be sold at an excessive price that will of itself prevent successful competition with shipowners of other nations.

2. We approve the establishment of a $100,000,000 merchant marine loan fund, under the administration of the Shipping Board, similar to the railroad revolving fund, but we recommend that the fund in question be raised by a bond issue to be called the Merchant Marine Bond Fund, and that its purpose be stated "to make loans for the purpose of upbuilding the merchant marine, to shipowners, builders and operators, at not less than 2 per cent interest."

3. We approve Section 3 of the tentative recommendations as follows:

"Income tax relief. (a) In order to create an incentive for shippers to use American flag ships and as a stimulus to our foreign trade, a deduction from net federal income tax payable should be allowed on the basis of a small percentage of the freight paid by exporters and importers on American flag vessels. (It is left open for consideration whether a similar deduction should be made on passenger fares.)

"(b) Through co-operation with the Treasury Department, or by legislation, a greater allowance for depreciation for income tax purposes should be made on ships, in order to make the depreciation allowance more accurately represent the actual depreciation of vessels and to give effect to the marked slump in the value of tonnage during the past several years."

As to the income tax exemption, we recommend that this be made applicable not only to freight moneys, but also to passenger fares.

As to increased depreciation, in view of the fact that many of the American companies do not have sufficient surplus or reserves from which to write down vessels now being carried at inflated values, it is recommended that companies so writing down their tonnage be permitted to reimburse themselves out of profits and/or exemption from taxation on earnings over a period of years after the reduction in capital value has been made.

4. The fourth recommendation presented to the Shipping Board provides for a non-profit making corporation created by the government to insure its own ships at cost, and to offer hull insurance at cost to private owners—the corporation to be managed by its policy holders who will all eventually be private shipowners. In this connection it is proposed that the government authorize the Shipping Board to classify American ships for insurance purposes and to insure cargo in such ships when private underwriters refuse to carry the insurance on the basis of the board's classification. The net effect of this, it is stated, will be to offer full insurance to American operators at about 20 per cent below the present cost, and to divert cargo to government-owned ships through the elimination of the present adverse differential in cargo insurance rates.

On this section the recommendation of the American Merchant Marine Joint Committee is: "If it is economically practicable for the government to broaden the insurance market and reduce rates, without injury to the industry, we believe it should be done. However, we are doubtful as to the practicability of doing this, and if it is impracticable the greater insurance cost to American ships must be made up by an addition to the direct subsidy. It is the opinion of this committee that the government should not enter the field as a direct underwriter."

5. Section 5 of the recommendations is a proposal for legislation and regulation that would assure to American passenger steamers at least 50 per cent of the immigration coming into the United States.

We approve this expedient as a valuable aid to the development of regular lines of the American merchant marine.

6. Section 6 of the recommendation is:

"License System. For the better regulation of foreign flag shipping touching our shores a bill along the lines of S. 2678, providing for a licensing system, should be adopted."

This proposal we regard as too indefinite to be considered at this time.

7. For Section 7, which now reads "revision of navigation laws," we would recommend the following substitute: "The recommendations of the Shipping Board Committee authorized two years ago to revise the navigation laws and rules of the United States, including the La Follette seamen's law, should be immediately approved and enacted."

8. Section 8 as recommended to the board is as follows:

"Sections 28 and 21. It is generally believed that considerable indirect aid will result from the making effective of Section 28 of the Merchant Marine Act providing for preferential through rates only on American flag vessels, and Section 21 of the act extending the coastwise laws to our insular possessions and the Philippines on or about February 1, 1922."

We approve these recommendations.

9. Section 9, dealing with the Naval Reserve, urges co-operation between the Shipping Board and the Navy Department for additional compensation for merchant officers and seamen enrolled in the Naval Reserve, with consideration for the recognition of vessels of desirable types as auxiliary naval vessels on terms that would be to the advantage of the shipowner and of the Navy.

The American Merchant Marine Joint Committee approves this proposal.

### Direct Aid

With regard to the forms of direct aid—a differential payment to American ships based, on their higher wage and subsistence cost, and postal subvention to regular services—the funds to be raised by the reserving of one-tenth of the customs receipts and of the increased tonnage taxes—the American Merchant Marine Joint Committee heartily approves the recommendations that have been made to the board. Of the three proposed plans for granting the differential payment we recommend that "whatever legislation is passed through Congress should be based on the principle of the Gallinger plan of so much per gross ton per year—the faster passenger ships to be encouraged by means of the postal subvention."

The American Merchant Marine Joint Committee believes that the legislation recommended should set forth the general principles upon which the subsidy should be granted as outlined above and that the Shipping Board should be given authority to carry out the details in accordance with those general principles.

In addition to the foregoing there are recommendations already passed upon by the American Merchant Marine Joint Committee not included in the Shipping Board outline on which these recommendations are based as follows:

Relief for pioneer purchasers on which all the associations represented in the joint committee are agreed, and with respect to which the following resolution was unanimously adopted at meeting held November 7, 1921:

"WHEREAS, at a meeting of the American Merchant Marine Joint Committee, representing the American Steamship Owners' Association, United States Ship Operators' Association and Council of American Shipbuilders, Inc., held in New York City on Monday, November 7, careful review and consideration were given to the subject of relief now being sought by purchasers of tonnage from the United States Shipping Board, it was duly

"RESOLVED, That inasmuch as the prices agreed to be paid to the Shipping Board for these vessels are proving destructive to the American ship owners who have made such purchases, the effect of which will seriously handicap the maintenance and further development of an American merchant marine and the American shipbuilding industry, it is urged and recommended that the United States Shipping Board devise some plan of equitable adjustment of the prices for the American ship owners who have purchased vessels from the United States Shipping Board and paid for same either in full or in part."

Pacific Marine Review
The National Magazine of Shipping

576 Sacramento Street
SAN FRANCISCO, CALIFORNIA U. S. A.

Official Organ of the Pacific American Steamship Association

Subscription Price, per year (Domestic) . . . . . . . $2.00
(Foreign) . . . . . . . $3.00
Single Copies . . . . . . . . . . . . . . . 25 cts

J. S. HINES . . . . . . . . . Publisher
B. N. DeROCHIE . . . . . . Business Manager
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ANDREW FARRELL . . . . . Associate Editor
M. G. HEDIN . . . . . Advertising Representative

NEW YORK OFFICE
339 at 30 Church Street
M. B. STEWART, Manager

Pacific Marine Review is sold at all leading News Stands
Entered as second class mail matter at Postoffice
San Francisco, California

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## MOTORSHIP VERSUS STEAMER

THAT the motorship under present conditions is winning out in its long argument with steam propulsion is perhaps nowhere better evidenced than in the story of the Danish motorship Polarhanet. This vessel, originally laid down for the Atlantic Ocean Steamship Company of Copenhagen as a geared turbine, twin-screw cargo steamer, was altered to a Burmeister & Wain Diesel engine-driven motorship while under construction because the engineers of the steamship company, having investigated thoroughly the present relative merits of the two drives, decided that it was good economy to spend considerably more money than had been intended in order to get the advantages offered by the Diesel engine.

The ship is a cargo vessel of 7500 tons deadweight capacity on 24 feet 9 inches loaded draft and with a normal average sea speed of 11¼ knots. The stipulated fuel consumption at sea loaded was to be 9.4 tons, this consumption being guaranteed as a contingency in making the change from steam to Diesel.

The chief factor in determining the economy of making this change is found in the fact that in this ship, equipped with Diesel engines instead of with geared steam turbines, the actual carrying capacity is increased by 400 tons. Incidentally, the fact was taken into consideration that the Diesel engine is always capable under any conditions at sea of developing the stipulated trial trip horsepower, whereas under normal working conditions at sea steam plants are frequently only able to develop about 75 per cent of the trial trip horsepower, so that it is safe to dimension a Diesel engine for less brake horsepower than a steam plant to obtain a certain propulsive effort and a certain mean speed in actual sea service for a given ship.

The conclusions reached by this Danish steamship company are particularly interesting, in that they are based on a 7500-ton capacity for a 6000-mile round trip and refute the claim so often advanced by steam engineers that the benefits of the motorship are only evident for large freighters over long distances.

The United States Shipping Board owns a large number of approximately 7500 deadweight ton capacity steel freighters. Nuff sed.

## IDLE SHIPS AND BUSY SHIPS

THE annual report of the Peninsular & Oriental Steamship Company is always an interesting document to shipping men, presenting as it does the largest ship operating effort under one private control. However, in his latest report Lord Inchcape includes some operating statistics which should be interesting to every American in considering the present difficulties before the ship owner and the services that ships perform in drawing "the world together."

These statistics will be found on page 116 of this issue. The principal matter of interest is that many ships which seem busy are in fact as idle as those which are laid up on the mud banks of our harbors. In fact, from the standpoint of the owner's pocketbook, they may be more idle. The story of eleven P. & O. freighters on the London-Australia run clearing with over 60 per cent of the hold space empty can probably be duplicated by the experience of many steamship lines, and indicates the reason for the present condition of the ship sales market.

Many of our most active ships are very idle, if judged by net earnings.

## SHIP PRICES

IN April, 1921, Pacific Marine Review published a graph prepared by Fairplay of London, on which was indicated the fluctuations of price for a "new ready for sea 7500-deadweight ton capacity cargo steamer." This graph showed the British market price obtainable for such a vessel on January 1, 1921, to be £105,000 sterling, or at the then rate of exchange $52.25 per deadweight ton. The curve as shown at that time was descending very rapidly; in fact, was almost vertical.

The 1922 edition of this graph is now out and shows that the price had reached £60,000 sterling on September 1, 1921, and apparently is halting around that figure, which at the rate of exchange January 1, 1922, would mean the equivalent of $33.40 per deadweight ton. This figure is interesting proof that the $35 per ton so frequently mentioned in recent months as the basic price for Shipping Board tonnage is, in fact, a good market value for standard new ready for sea freighters.

The British figure of £60,000 is identical with the market price for such tonnage on January 1, 1915, and compares very favorably with the low record of 1908, when such tonnage could be bought for $36,000, or at normal exchange $23.32 per deadweight ton. So the Shipping Board had better sell out as promptly as is practicable, even if the prices realized seem small, for the ships are multiplying much more rapidly just now than is warranted by the growth of trade, and prices are not at all likely to improve for some years.

## REVIVAL OF SAIL

In connection with numerous articles published in recent months and in the current issue by Pacific Marine Review on sailing vessels and auxiliary sailing ships, it is interesting to note that there has recently been a decided revival in the use of sailing vessels in the Australasian-British wool trade. The sailing vessel has in this trade been able to offer more favorable rates than the steamers were willing to give, and on account of the fact that there was no immediate pressure for supplies of wool, shippers have been able to take advantage of this cheaper space.

There was recently noted on the London market that at one time four comparatively large cargoes of wool in sailing ships were en route from New Zealand to London, the cargo aggregating in the neighborhood of 50,000 bales of wool. This is only one of the many indications that the period of low ebb in ocean freight has, as usual, revived interest in the vigor of the voices of the wind. In practically every maritime country of Europe and in all European coasting operations there has been a decided trend toward return to more sail power, and if we are not misinformed by our correspondents, the same thing is true in a large measure of the coastal trade of the Atlantic Coast.

## A MARINE OASIS

The officials of the International Mercantile Marine Company expect to have the new White Star liner Majestic, largest ship in the world, leave Southampton for New York on April 5, 1922. Already the commissary department of the White Star Company is busily making its estimates for provisions for the round voyage from Southampton to New York.

The Majestic will carry 4100 passengers and a crew of 1000. Her refrigerators will be stocked with 75 tons of fresh meats, 10 tons of bacon and ham, 20 tons of fish, and 18 tons of poultry. Game birds will also be included in abundance. Plover, quail, snipe and pheasant to the number of 1000 each, 750 partridges, 750 grouse, and 500 wild ducks will certainly give the chef sufficient material with which to delight the palates of trans-Atlantic epicures.

For those who are interested in wet goods there will be included in the liquor list 80,000 bottles of ale and stout, 2600 bottles of champagne, 2300 bottles of other wines, 4000 of whiskey, brandy and gin, and 300 of liquers.

## THE FIRST TURBINE LINER

The old Allan liner Virginian was the first oceangoing passenger liner fitted with turbines. She and her sister, the Victorian, delivered a few months later, had direct connected turbines with small propellers and large, rather slow, turbines. As such, their plant was not a great success, the speed of the boats—fifteen knots—being too slow for effective propulsion by direct connection to fast-running turbines.

The Virginian, under a new name—the Drottningholm—is now being refitted at Gotenburg with De Laval geared turbines with practically a guarantee that she will do 2½ knots better speed with 10 per cent less power. The propeller design is being changed, and while she will still have three wheels they will run at two-thirds the speed of the original wheels. Instead of burning 200 tons of coal a day she will burn 145, a a very marked saving. Thus we see the pioneer ocean turbine liner going to the pioneer geared turbine manufacturer to be refitted in conformity with more modern engineering practice, and at the same time realize the advance made in the economies of marine propulsion during the past sixteen years, the Virginian having been built and delivered in 1905 by A. Stephen & Son, Glasgow. She is of 11,143 tons gross register, 517 feet long, 60 feet beam, 38 feet molded depth.

"The old Cunarder Russia,
Ever pleasing to the eyes;
A single screw; a beauty, too;
Three thousand tons, her size.
For gracefulness and elegance
She was old Neptune's pet;
Six hundred thousand miles she sailed
And mishap never met."

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# THE SHIPPING SITUATION

### By TOMPKINS McILVAINE

**The subcommittee of shipowners of the American merchant marine joint committee of the American Steamship Owners' Association sent out during October of 1921 questionnaires to shipowners and to others with experience in marine matters requesting their views on the shipping situation. Many interesting replies were received. One of the most interesting was the letter from Tompkins McIlvaine, editor of the National Service Magazine, New York, who attacks the problem boldly from an international standpoint and arrives at some very interesting conclusions. Pacific Marine Review does not sponsor either the conclusions or the theories through which the writer reaches those conclusions but publishes here the entire letter, knowing that it is typical of the opinions and convictions on this subject held by many hard - headed American business men.**

As I see the American shipping situation in the cold gray dawn of the morning after, it is something like this:

Shipbuilding the world over was artificially stimulated far beyond normal commercial needs; during the war as a war necessity and for two years after the war by the extraordinary—and temporary—demand for goods. Recently, owing to the complete or partial collapse of various countries, international trade has fallen off to such an extent that not far from half of the total world tonnage is lying idle and the remainder doing but a precarious business. The American government contributed to this wholly uncommercial increase in world tonnage by building during the war and continuing to build after the war a great fleet amounting to nearly a half of the present idle tonnage.

The American tariff system is inconsistent with the maintenance of an overseas merchant marine on a **competitive** basis. Wages in this country have for many years been kept up by our tariff wall; **within** which wall merchant vessels must be produced and also **within** which the crews to man them must be found—if we are to have an **American** merchant marine. Our tariff makes impossible the production of vessels here as cheaply as in foreign countries, and the opportunities within our country created by the tariff wall make it impossible to secure American crews at so low wages as foreign crews. On the other hand, an American overseas vessels produced and manned at these higher costs must operate **without** the tariff wall in **competition** with the vessels of all foreign nations.

The history of the course of ocean freight rates shows that it is only occasionally and under extraordinary circumstances that there is anything more than a modest profit for any country in the operation of merchant vessels. This because in ocean transport, necessarily a free for all business, any rise of rates immediately stimulates shipbuilding the world over. Consequently, it is only under exceptional circumstances, such as conditions created by the world war that the operation of ships is highly profitable, and, of course, these conditions are always temporary. Certain countries peculiarly situated geographically, without great natural resources and with a lower standard of living and wage scale, feel compelled to maintain a merchant marine, and it is the vessels of these countries that really set the freight rates. An American merchant marine has not only to face all the disadvantages that the merchant marine of any other nation has to face, but before it can start on even terms with the marines of other nations it has to overcome the handicap of higher costs of production and operation. And so I say it is impossible to maintain an **American** merchant marine on a **competitive** basis. If such a marine is to be maintained it must be on some other basis. (Of course we could allow foreign built vessels to be operated by foreign crews under the American flag, but such a marine would be American only in name.)

The first question is, therefore—does America want a merchant marine? In my opinion no country wants a merchant marine unless it can be maintained either on a competitive basis or is necessary for national safety. Since we are a self-sustaining country and since foreign vessels will carry American goods as cheaply as they will the goods of their own or any other country, I see no reason, while we remained a purely continental country, why our safety required a merchant marine. But now that we have far flung insular possessions and are inclined to dispute the control of the Pacific with at least one country and the control of the Panama Canal with all the world, the situation is different. Revived Russia is likely to be dominated by Germany. Even a German-Russian-Japanese combination is not an impossibility of the future, and geographically such an alliance is logical. During the war American pre-war-built vessels transported an almost negligible number of troops and amount of supplies. For example: Though we boasted that 45 per cent of our troops were carried in American ships, the fact is that well under 10 per cent were carried in ships built in America. The only justification for the statement was the fact that over the foreign ships begged, borrowed or seized the American flag had been hoisted—this for official purposes making them American. Of the cargo transports only about 5 per cent of the tonnage came from existing American trading vessels; the remainder was requisitioned or borrowed. (The vessels designed and built by the government were completed too late to be used in the war.)

It is for Congress to say whether or no we need a merchant marine for national defense. If we do not we may as well take our shipping loss at once and withdraw from the attempt to become one of the principal maritime countries of the world. If Congress decides that we do need a merchant marine, then Congress must recognize that a merchant fleet is an integral part of our naval defenses and provide, as part of our national expenditure, a subsidy sufficient to put our merchant vessels on an equality with foreign vessels in the matter of costs. Incidentally, it may be remarked that our navigation laws and the demands of our labor organizations are handicaps that also increase the costs that must be equalized with the foreign costs before we can even start to compete. The amount of the subsidy necessary to equalize our costs with foreign will of course vary from time to time, but it can be safely said that it would be infinitely cheaper than governmental operation. Of course, it is only operating costs that for many years to come will need to be equalized, since present overproduction will make new construction unnecessary for a long time.

Before leaving this subject it should be noted that limitation of naval armament, however far reaching, will not make a merchant marine less necessary as part of a system of national defense—quite the contrary. The fewer the true combat ships the greater the possible role of transformed merchantmen, as the Secretary of State recognized in his armament limitation proposals.

Operating our government-owned vessels through the Shipping Board, the government meeting the loss, amounts to a subsidy, even though nominally the vessels be managed by private corporations. Any tax discrimination or exclusive privilege in favor of American vessels also would amount to a subsidy, as would any reduction of railway freights on through shipments by rail and sea; the only difference between such forms of subsidy being whether or no the payment of the subsidy is borne by the government, and so by the whole people, or is saddled on private investors such as the holders of railway securities. If we are going to give a subsidy we might much better be honest and pay it out of the general tax levy. Any other plan is simply a concealing of the fact.

The granting of a subsidy presupposes private operation. This implies turning our government-owned vessels over to American companies on some basis or other. As these vessels cost something like two billion dollars, a sale is out of the question, and the only practical plan is that of transferring them on some profit-sharing basis; for example, on terms under which the operators would pay operating costs and on any excess of receipts over such costs have a first claim for their profit fixed on a percentage basis according to the necessary operating capital supplied, the government receiving the remainder, less a further small but increasing percentage thereon to the operators, this to give the operators an incentive to earn a profit for the government. And here it will be noticed that in fixing the amount of any subsidy there should, of course, be taken into consideration that companies operating government-owned vessels on such a profit-sharing basis would not have to pay interest on the investment, and, if the insurance were carried by the government, insurance premiums, while privately-owned vessels are subject to these charges.

But the matter does not end with the granting of a subsidy which, if granted at all, would, it may be assumed, like the tariff protecting our internal industries, be granted on the basis of an attempt to equalize the difference between American and foreign costs. In return for a subsidy, American vessels would comply with certain conditions regarding protection, armament and so forth; the government would be at liberty to requisition them during hostilities at some low rate of compensation, and the officers and at least a proportion of the crews would become members of the Naval Reserve. It should be remarked that though a subsidy to equalize the difference in costs might be justified as a matter of national defense, a subsidy to continue to operate our vessels while the tonnage of the world is operating at a loss, is an absurdity.

The first requisite to the maintenance of an American merchant marine, precedent even to the granting of a subsidy to equalize our own and foreign costs, is that the tonnage of the world shall be operated at a profit. The tonnage of the world cannot operate at a profit so long as there are two tons of availagle shipping for every ton of cargo to be carried. The shipping of the world cannot be maintained on a losing basis any more than can any other business—for instance, the railways. Shipping is a business and no business can continue to be run at a loss. Furthermore, ocean freight rates will not rise to a level sufficient to provide a fair profit until trade increases or vessels decrease. International trade will revive but slowly. Tied up the vessels will depreciate rapidly. As a practical matter, if America is to have a merchant marine, whether for national defense or any other purpose, America must find some way to bring cargo offering and vessels afloat into a balance.

This brings up the question of whether America, or any other country, can, as a pure matter of business, afford to maintain in idleness the present excess tonnage. In my opinion, the preservation of this idle tonnage cannot, from the point of view of dollars and cents, be justified. Everyone familiar with shipping knows that properly to care for a ship while tied up is an expensive matter. The vessel has to be kept insured; a skeleton crew to be paid and fed; the engines turned over frequently; fuel, paint and other supplies purchased; and the vessel to be periodically hauled out and her underbody cleaned and repaired. Vessels not only deteriorate as they age but get out of date. Calculations that I have caused to be made indicate, in a general way, that vessels of a size for overseas service would, as a rule, eat themselves up by depreciation and expenses incident to tying up, in perhaps five years—of course assuming some fair present value, a value, needless to say, far below the excessive cost of production during the war.

The answer to the question, What to do with the idle tonnage, therefore comes down to the question of how many years must elapse before this tonnage could be put into profitable service. That the great bulk of idle tonnage could not come into profitable service within five years is, I believe, the opinion of those qualified to speak.

I cannot escape from the conclusion that there is but one business-like thing to do with the idle tonnage, and that is to destroy it—take the vessels out and sink them in blue water, or fill them with sand or cement and use them as breakwaters; since to keep them will cost more than they are worth. Really there is nothing new in this idea; it is as old as business itself.

Of course, if the idle tonnage is to be destroyed, it should be by the concerted action of world shipping interests, so that the relative importance of each nation's fleet may be maintained. This would only be following America's proposal in regard to the combat fleets, though it would be much better in regard to the merchant marine that this international action should be taken by private interests and as far as possible be free from governmental interference, which is usually disastrous in business affairs. If the vessels to be destroyed have to be requisitioned by the government of each country concerned, compensation must be provided; whereas if the matter be managed wholly by private interests it might be possible to work it out on a tonnage basis, each interest making an appropriate contribution. If governmental compensation has to be given it might be provided for by bonds, the interest and principal of which would be met by a contribution from future earnings of the remaining vessels. Of course it would not be wise to destroy the entire idle tonnage, as it exists at the present moment, but only such part of it that a fair estimate of future requirements indicates would not be needed and could not come into profitable service before being eaten up by depreciation and caretaking charges.

If any attempt were to be made to put such a plan as I have outlined in practice, the first step would be the calling of an international conference of those conversant with international trade and shipping, with a view to working out the following factors:

1. The probable demand for ocean tonnage during, say, the next five years.
2. The amount of excess world tonnage that will not be needed during the same period.
3. The amount of world tonnage that it is prudent, from the point of view of any probable increase of trade, and profitable, from the point of view of the value of vessels as compared with the cost of tying them up, to destroy.
4. The classes and age and the fair share of each country of the tonnage to be destroyed.
5. A method for the selection of, and, if necessary, the compensation for, the share of each country's tonnage that is to be destroyed. (Any modification of the general plan necessary to fit it to the peculiar conditions of the countries concerned to be worked out within the general plan by each country.)
6. An agreement under which all excess tonnage over present needs not destroyed shall be withheld from service and released only as the growth of international trade requires and as the vessels in service continue to be operated at a profit; such release to be on a percentage basis so that each country would participate in a fair proportion.

This letter is my compliance with your request that I express to you the views that I have reached as the result of my study of the shipping question; otherwise I should have hesitated to add any word of mine to this much vexed and misunderstood question. Of course I have been speaking of freighters, though, in the main, what has been said applies to the passenger business. As to the wooden vessels there is of course nothing to do but scrap them. They were never of any use; as a friend of mine says, "The darned things won't even sink."

# A VITAL FACTOR IN ECONOMY OF OCEAN TRANSPORT

### By JOHN L. BOGERT

IF a railroad man is asked to name one of the reasons why freight rates cannot be lowered, he will probably reply: one-way traffic. Watch a long train of empties moving West, and realize that the goods they carried East must pay the cost of the double haul. The same thing meets you in nearly every industry. The cost of delivery is founded upon a more or less full load one way and a no load the other.

In studying distribution costs you meet this peculiarity of the problem at every turn. It is therefore not to be wondered at that ocean transport economy must reckon with it. The only time a vessel can be said to be earning money is when she is at sea; surely not when she is at anchor or tied up to some pier. Under the circumstances one would naturally suppose a ship would be in port no longer than might be necessary to unload or discharge her incoming cargo, and load up with outbound freight.

The bulk of the ocean-carrying freight of the world is transported by tramp steamers, and statistics appear to indicate that the average cargo ship is at sea but 150 days out of the 365; 215 days out of the year her propeller doesn't revolve, and whatever earnings the year's voyages may show have really been due to 150 days of actual transportation.

This seems a highly inefficient condition. The interest on the investment and the depreciation run continually whether the ship be tied up or at sea, to say nothing of the grass and barnacles that grow night and day, some portion of the full crew's expenses and the upkeep.

In the old days of the sailing ship a round trip a year from England to Australia, amounting to about 27,000 sea miles, was considered rather an easy schedule when trips of 75 days each way were not uncommon. So that, according to the foregoing, the steam cargo boat doesn't appear to stay at sea much longer than the sailing ship.

Such a showing is bad enough, but it isn't by any means the whole story. What about the ship "in ballast"? Tankers carry oil but one way, but they make up for that economic defect by stopping in port but a few hours to either fill or empty their tanks. So though they travel two knots to carry cargo one, they undoubtedly perform a better economic service than the average cargo steamer. They may be twice as many days at sea, and their expenses for "loading and discharging cargo" are insignificant when compared with the cargo steamer.

In the year 1899, before the day of the tanker, some figures were published showing that taking the average of all ocean-going ships, both sail and steam, those in ballast as well as those loaded, the average cargo was about 64 per cent of capacity.

The long string of empty freight cars is represented at sea by the cargo steamer "in ballast" moving from one port to another in search of freight. The ship in port, "grounding on her beef bones," corresponds to the freight cars on the sidings. Now 150 days of actual service out of the year is 41 per cent of the full elapsed time, and 41 per cent multiplied by 64 per cent (the percentage of full load) equals 26¼ per cent. Now while, of course, every one knows time must be taken to drydock the ship as well as load and discharge her, nevertheless it can be safely maintained that the average of ocean tonnage is not much more than 50 per cent efficient.

On the Great Lakes coal and ore are carried at a lower cost than any commodities are transported anywhere in the whole world, if we except floating cargoes down a river by means of the current. One of the important reasons is that nowhere in the world is loading and discharging performed in any such time. A 600-foot steamer comes into port in the morning, discharges from 10,000 to 13,000 tons of ore, loads up with an equal weight of coal and is sailing out of harbor in the afternoon. Ninety per cent of the time at "full speed ahead" is a possibility. The season of closed navigation is naturally availed of to make whatever repairs are called for.

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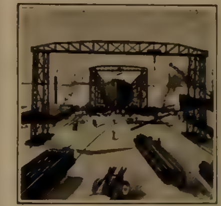
### INDEX FOR 1921

READERS of Pacific Marine Review who are keeping back numbers or having volumes bound will be glad to know that we have completed an exhaustive cross reference index for 1921. This index will be found in the current issue, beginning on page 152 and continuing into the industrial section.

# Material Handling



# AN IMPORTANT FACTOR IN THE ELIMINATION OF INDUSTRIAL WASTE

By H. V. COES*

THE Committee on Elimination of Waste in Industry of the Federated American Engineering Societies states, "It is peculiarly the duty of engineers to use their influence individually and collectively to eliminate waste in industry." The materials handling division of our society is concerned with the wastes of (1) capital, (2) material, (3) labor, and (4) production, resulting from lack of or inadequateness of material-handling equipment and methods in industry and their inefficient use and operation.

Modern civilization is the direct result of the application of the principles of subdivision of labor. This in turn has resulted in inventions largely labor-saving, and material-handling devices have played an important part in this development. Yet today, in spite of equipment and methods now available, material is handled constantly in identically the same manner as in the early stages of civilization.

Why is this? In the opinion of the author it is due to a number of influences, such as—

1. Ignorance of methods and equipment available.
2. Lack of standardization of materials, methods, containers to be handled to permit installation of and economical use of material-handling apparatus.
3. Insufficient comparative economic data.
4. Improper engineering.
5. Poor salesmanship and selling policies.
6. Lack of a central organization to educate the public and to act as a clearing house for economic and technical information.

There has recently been published an Encyclopedia of Material Handling, prepared by recognized authorities. This is a step in the right direction and it should prove of considerable assistance, particularly in eliminating ignorance of methods and equipment. The meetings and symposiums of the materials handling division of our society will, if conducted and prepared along broad lines, aid largely in the educational campaign.

Lack of standardization of containers is a peculiarly potent deterrent to proper economic solutions of material-handling problems, particularly at express and package-freight stations, terminals, transfer points and steamship docks. The materials handling division can perform a service of inestimable value to the country by forming strong committees to make an engineering study of this important problem. A proper solution would reduce waste due to loss and breakage, waste of transportation space, waste in production, and shipping costs.

It is a well-recognized fact in industrial-plant operation that the last 20 per cent of operating efficiency is the hardest to obtain, and yet shows the highest return. Thousands of plants in this country do not show an operating efficiency of more than 50 per cent, as compared with those plants that have an operating ratio as high as the present state of the art will permit. There are many reasons for this low operating ratio, but we are concerned only with the losses due to inadequate and inefficient material handling. Industrial costs are composed of the following factors:

1. Material.
2. Production labor.
3. Factory burden or overhead.
4. General administration expense.
5. Sales expense.

As a usual thing, indirect or non-productive labor is charged out to factory burden. A very large por-

A six-story wholesalers' warehouse unit recently installed by the Southern Pacific Company on Channel street, San Francisco. Deep water on one side, transcontinental rail connection on the other. The California Board of State Harbor Commissioners has purchased a site for and plans the erection of two similar units on the north and south sides of Channel street. These warehouses will give San Francisco unexcelled transshipment facilities.

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* Manager, Ford, Bacon & Davis. Member Am. Soc. M. E.

Paper presented at the annual meeting, New York, December 5 to 9, 1921, of the American Society of Mechanical Engineers.

tion of this labor is used in picking up, putting down and transporting material of all kinds. Hence one place to start in reducing factory burden is to reduce waste in labor and expense in this indirect-labor item by substituting adequate and properly adapted material-handling equipment and methods.

### A Few Examples of Savings Effected

Some specific cases will help to visualize the situation better:

a. In a large plant in Cleveland, Ohio, 55 men and 25 units are doing the work which today would require 550 men for handling alone, if they reverted to the old methods of five or six years ago.

b. A tractor and 16 trailers reduced the yard gang from 18 to 4 men and eliminated a mile of industrial track, the salvage of which nearly paid for the initial installation.

c. Mr. Max Sklovsky,[†] after an exhaustive study of material handling in his foundry, recently made the startling statement that he was handling 168 tons of material for every ton of finished castings produced, the figures for 100 tons of castings being as follows:

| | Tons |
|---|---|
| Metals | 2,606 |
| Coke and lime | 95 |
| Core material | 1,278 |
| Molding sand | 7,491 |
| Equipment | 5,150 |
| Miscellaneous | 200 |
| Total | 16,820 |

d. Mr. W. G. Bridgeman[‡] cites some interesting comparisons of handling costs at terminals. Two-wheeled trucks were used under the old method, electric tractors in the new method:

| Terminal | Tons per man per hr., old method | Tons per man per hr., new method | Cost difference per ton |
|---|---|---|---|
| Wilmington, N. C. | 0.873 | 3.49 | $0.281 |
| South Atlantic port | 1.29 | 2.72 | ........ |
| Cincinnati | 0.722 | 0.918 | 0.14 |
| St. Louis | 1.2 | 1.8 | ........ |

Mr. Bridgeman further states that in his opinion 75 per cent of the freight houses in the country can increase production per man per hour anywhere from 25 to 100 per cent, and this will be accomplished mainly by the use of mechanical equipment for handling freight.

e. Mr. J. A. Kreis[§] states that their 20-ton locomotive crane "not only speeds up handling of material but pays for itself every four and a half months."

f. A battery of four Wellman-Seaver-Morgan unloaders can now unload a 10,000-ton ore vessel in three and a half hours. In the old days, using a clamshell bucket, the cost was around 25 cents per ton; today it is 2½ to 4 cents per ton. This cost includes overhead, interest on plant investment, and maintenance.

It can thus be seen that there are opportunities in almost every branch of industry to reduce large wastes in material handling.

### The Art is New and Requires an Unbiased Viewpoint

The public, industrial executives and business men generally are not in possession of sufficient data and economic facts to make them realize the astounding wastes going on all around. Engineers and manufacturers are largely to blame for this. The industrial executive usually knows how much per piece or per unit it costs to produce a given article, but rarely knows what it costs per unit to handle the materials entering into the manufacture of the article itself or the cost of handling the finished article. It is only recently that industrial plans have been designed or laid out on a material-handling basis. The writer knows of plants that do very well in normal times whose physical handicaps due to the absence of any consideration of material handling in the old days are such that it is a physical and financial impossibility to provide adequate material-handling methods and equipment for them. In many cases like these the savings in labor alone would pay a very substantial part of the fixed charges of a rehabilitated or a new plant.

For instance, a certain modern plant cost, including land, $1,500,000. It is operating today at about one-third capacity, yet the savings in labor alone pay the annual fixed charges of $145,000.

In many instances manufacturers of material-handling equipment have been remiss and short-sighted in selecting men of the wrong type to represent them, men in many instances without knowledge or comprehension of the underying economic laws. Capital wastes, dissatisfaction, and frequently bitterness, result from sale of unsuitable, inadequate or incomplete equipment.

If the manufacturer will get the engineer's point of view and the engineer the manufacturer's, and both will get the economic viewpoint, much good will result, fewer mistakes be made, and society and industry will benefit and prosper. By all means, then, let us work for right solutions of our material-handling problems. Let us be fair to each other, to ourselves, to the public, to labor, and make one dollar, not ten dollars, do the work of one. A proper attitude of mind in material-handling problems is important.

### Initial Solution Not Always Best, But Perseverance Wins

The human mind apparently functions in a peculiar manner, particularly in connection with mechanical or technical problems. It seems necessary to start with the complex before the simple can be attained. This characteristic of the mind needs to be watched very closely in its relation to material-handling problems.

The problems as usually presented in almost any industrial plant or terminal tend to confuse. The tendency of the mind to see the problem in all its complexities frequently leads to a complicated initial solution, but as a rule these initial solutions are rejected as the simple, less costly and more efficient solution finally evolves. We should analyze the problem, carefully determine the number of transfers and make ourselves find and retain the simple solution. Therefore, we should not be discouraged if the first solution does not yield the estimated savings that it is felt should be secured, but should persevere until a thorough analysis reveals the simple solution.

It should be the endeavor of our materials handling division to place material-handling matters on a high plane; to seek the truth relentlessly and fearlessly; to secure a thorough exchange of views; to obtain a better understanding by the public, by labor, by engineers, by the manufacturer, of the real economic purpose of material handling.

### Lowest Cost the Goal in Handling Materials

The initial test of any method, system or device, should be an economic one. The question of will it pay should not be begged. Capital has been wasted, pioneers discouraged, the public bewildered, because of undertakings not conforming to this test.

Mr. Willian F. Hunt[*] postulates these principles as follows:

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[†] Chief engineer, Deere & Company, Moline, Illinois.
[‡] General superintendent, Terminals Operating Company, New York.
[§] Hupp Motor Car Company, Detroit, Michigan.

[*] Handling Materials in Factories, William F. Hunt.

1. In handling material, perform only the handling operations that are absolutely necessary.

2. Perform these operations in the way that secures the lowest cost.

When a simple plan for handling materials has been developed, the financial returns of the installation will, in the absence of labor difficulties, largely determine the wisdom of the installation. It may pay to install apparatus, and it may not, according to conditions such as—

a. Constancy or intermittency of the work.
b. Character of the operation itself.
c. Results of analysis which follows.

If labor can be saved or manufacturing conditions improved by the use of apparatus for handling material, we can readily determine how much labor will be required by the method proposed. By comparing this method with the present method, we can ascertain the probable labor saving effected.

The investment justifiable to effect the saving is the item in the investigation that is the most difficult to analyze, as it has so many variables. The figures obtained by the following method are an indication of facts and the ultimate decision must be dictated by good judgment and a general consideration of the whole situation.

### How to Arrive at the Best Method

The variables are many in the work to be performed. The work may be of temporary character, infrequently done, the amount fluctuating widely, or it may be a regular daily operation, year in and year out; this item varies from 0 to 100 per cent. If the work is of a temporary nature, no saving can be made, whereas if it is of daily necessity for the future, the whole saving of reduced labor by the plan suggested is available. The true value exists somewhere between these two extremes, and it need not be difficult to assign a value to this item after thorough observation and careful consideration. Let us call it X per cent.

The variables in the investment value may be classed as follows:

A=interest charges on investment, per cent.
B=interest to provide for upkeep of apparatus installed, per cent.
C=interest to provide for depreciation due to age, per cent.
D=interest to provide for progress in the art of the particular device proposed (subsequent inventions), per cent.
E=interest to provide for extensions to service, per cent.
H=additional superintendence and overhead expenses due to change in method, per cent.
K=interest to provide for taxes, per cent.
F=cost of power, supplies and other variable items in dollars, per year.

Let S=yearly saving in labor in dollars
and Z=investment in dollars justified by the foregoing considerations.

$$\text{then } Z=\frac{S\ (X \text{ per cent}) - F}{(A+B+C+D+E+H+K) \text{ per cent}}$$

Working this out for an assumed set of conditions, assume that the work which under the present methods of moving materials requires four men employed at $3 per day, 300 days per year, at a yearly cost of $3600, can be done according to the new method by one man costing $900, thus saving $2700 per year. The plant operates on shift, men employed 80 per cent of the year.

Then X=80 per cent C=15 per cent H=3 per cent
S=$2700 D=10 per cent K=3 per cent
A= 6 per cent E= 3 per cent F=$400
B=20 per cent

$$\text{and } Z=\frac{(\$2700 \times 0.80) - 400}{0.60}$$

$$=\$2933.33$$

This means, then, that equipment costing under $2900 will earn maintenance, interest, depreciation, obsolescence and tax charges and show a saving besides.

Assuming that an electric-storage-battery industrial truck costing $1750 will meet the conditions, the yearly operating cost would be as follows:

I=cost of equipment = $1750
Y=yearly operating cost
$=I\ (A+B+C+D+E+H+K)+F$
$=(\$1750 \times 0.60) + 400 = \$1450$

Then S=$2700 — $1450 = $1250.

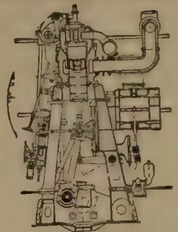
This is an actual saving of $1250 a year, a return of approximately 71 per cent on the investment over and above all interest charges, upkeep, deterioration and obsolescence.

Only by some such analysis can a real solution of the problem be obtained. Unfortunately salesmen in their eagerness to take orders, and managers in their ignorance of the underlying conditions, sometimes overlook some of the factors in the problem, with the result that anticipated savings are not obtained.

Too much thought and consideration cannot be given to the selection of equipment that not only shows a saving but fits into the general operating conditions of the plant, or suits physical conditions imposed by plant or location, and yet at the same time fits into plans for future extension, development or rehabilitation of the plant. A $25,000 locomotive crane will last a long time if properly cared for. If future development of the plant does not provide space enough for the utilization of the crane to its best advantage, then the crane may not be the piece of equipment to select initially, even though it will satisfy all of the initial conditions.

Pneumatic grain handling machinery at a European port. This method of handling grain and other loose bulk cargoes has shown very marked economy and is in great favor at all the Western European ports.

# Oil Engines and Motorships



# ELECTRIC DRIVES FOR MERCHANT SHIPS

By W. E. THAU

IN the January issue of Pacific Marine Review we published the first part of a paper on this subject read before the Society of Naval Architects and Marine Engineers by W. E. Thau. Here follows the second part of that paper, which is devoted to Diesel electric drives for merchant ships.

**Diesel Electric.**—For practical reasons, direct current only is feasible with Diesel electric drive. This will be evident by a proper analysis of the performance of Diesel engines in connection with the characteristics involved in applying A. C. and D. C. machinery, due consideration of ship requirements being taken into account. To obtain the best results with Diesel electric drive, it is necessary to provide several relatively small and moderately high-speed generating sets for supplying power to single or double-unit direct-connected propelling motors. Not only must the generated power divide evenly or proportionately between the generating units, but the system must also be such as will conveniently and economically lend itself to speed control.

In the case of alternating current it would be necessary to operate the generators in parallel. To operate A. C. generators in parallel necessitates the very closest speed regulation and practically identical angular velocities of all prime movers. To properly visualize this exacting requirement it must be remembered that satisfactory parallel operation of A. C. generators necessitates that the angular displacement of the field poles of one machine with respect to another must not vary more than approximately + 3 electrical degrees, or a total of 6 electrical degrees. Since 360 electrical degrees constitute the space between adjacent like poles, the total variation in mechanical degrees, for example, in the case of a 20-pole machine, must not exceed 0.6 degree. While successful operation under such requirements is carried out in several land installations where the prime movers operate at constant speed, it is not considered safe practice on board ship where the necessity for varying the speed of all sets simultaneously introduces another very serious difficulty. To overcome this condition successfully would require absolutely perfect engine governors which would function 100 per cent perfect at any speed setting. The speed of the motor could be varied by the rheostatic method, thus allowing the engines to operate at constant speed; however, this method is extremely wasteful at reduced speed operation and at best offers a solution for only one of the many difficulties. It is for these reasons that alternating current is not suitable for Diesel electrical propulsion.

Direct current not only obviates all of the above difficulties but possesses many advantages in the way of operation, control and reserve power. With direct current we have the choice between two methods of generator operation, i. e., parallel and series. From the standpoint of engine performance only, parallel operation of D. C. generators is entirely feasible and easily accomplished. However, when considering economical methods of speed control of the propeller motors, another factor enters which makes parallel operation difficult, even with D. C. machines. This is explained below.

With direct current we have a choice between two methods of motor speed control, i. e., armature rheostatic and generator voltage control. Armature control is not only unjustifiably wasteful at reduced speed operation, but also adds complication to the control. On the oth-

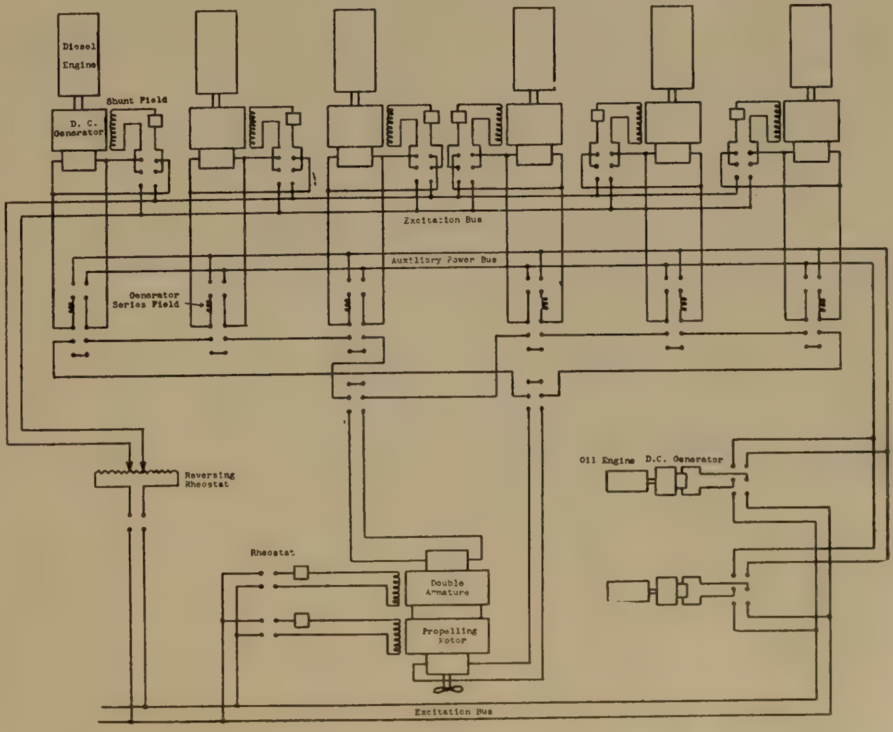


Fig. 8. Diagrammatic Scheme of Connections
Diesel - Electric Drive

er hand, the voltage control method is practically 100 per cent economical and provides an ease and a flexibility of control unapproachable by other systems. In the case of very small drives, armature rheostatic control might be selected because of factors not related to the propulsive equipment making it preferable to have a constant voltage system which is common to the propulsion and auxiliary circuits. For a drive of any appreciable size, the best results are obtained by isolating the propulsive equipment so that immediate maneuvering can be done without affecting non-related circuits. Therefore, having an isolated plant for propulsion only, voltage control is obviously the method to use.

With parallel operation of generators, voltage control is not simple of accomplishment. To satisfactorily vary the voltage of two or more generators simultaneously over the full range from zero to maximum necessitates very closely and very carefully adjusted field rheostats, generators with practically identical saturation curves and engines with practically identical regulation, or some complicated and delicate automatic voltage balancing instrument.

The series arrangement of generators, however, is ideal from every standpoint, such as operation, control, economy, simplicity, flexibility, reserve, etc. The series arrangement, in eliminating parallel operation of generators, obviates the necessity for close regulation, and hence simple engine governors and simple field rheostats are entirely satisfactory. In other words, satisfactory operation is independent of variation in voltage between the different generators.

Besides the operating advantages, the series arrangement inherently provides for full power from each of the remaining generators in case of casualty to one or more of the generating sets without providing additional capacity, and consequently additional weight in the motor. To obtain full power from each of the remaining sets with parallel operation would necessitate increasing the motor field in order to lower its speed to such a value as would require the total capacity of the remaining units, thus necessitating a larger and heavier motor.

Figure 5 shows a diagrammatic scheme of connections for a single-screw Diesel electric drive. In this particular case there are six generating sets and one double-unit direct-connected motor. The six generators and the two motor units are connected in series. The machines are distributed electrically as follows: three generators, one motor unit, three generators and one motor unit, to reduce the voltage strain, or the maximum voltage to ground at any two points to one-half the total voltage of the system. The voltage of each generator being 250, we have in effect a 1500-volt system with only 750-volt insulation requirements. The advantages of this arrangement are obvious, especially in the case of large capacity drives and where there are several generators involved. The diagram shows an arrangement for using as many as may be desired of the main generating sets for supplying power to the ship's auxiliaries when in port. Although the generators (and motors) operate as pure shunt machines when driving the ship, series windings on the generators are automatically placed in circuit when the generators are connected to the auxiliary bus, and therefore the generators operate as compound machines when supplying the auxiliary load, and when used for this purpose the generators are operated in parallel. Arranging the generators for supplying power to the ship's auxiliary bus determines the voltage of the individual machines (250 volts).

ELECTRICALLY PROPELLED MERCHANT AND MISCELLANEOUS SHIPS IN SERVICE AND BUILDING.

| Ship | Kind | Total S. H. P. | Type of drive | Tonnage displaced | Date |
|---|---|---|---|---|---|
| 2 ice-breakers at Niagara Falls | Tug | 50 | Trolley or cable fed, D.C. | ..... | 1906 |
| Joseph Medill | Fireboat | 400 | Turbine-electric D.C. | ...... | 1908 |
| Graeme Stewart | Fireboat | 400 | Turbine-electric D.C. | ..... | 1908 |
| Electric Arc | Experimental launch | 25 | Petrol-electric A.C. | ...... | 1911 |
| Tynemount | Cargo | 500 | Diesel-electric A.C. | ...... | 1912 |
| Mjolner | Cargo | 950 | Turbine-electric A.C. | ...... | 1912 |
| Wulsty Castle | Cargo | 1,500 | Turbine-electric A.C. | ...... | 1918 |
| Aquila, etc. | Cargo | 1,200 | Turbine-electric A.C. | ...... | 1918–9 |
| Mariner | Trawler | 400 | Diesel-electric D.C. | 500 | 1919 |
| Eclipse | Cargo | 3,000 | Turbine-electric A.C. | 16,000 | 1920 |
| Cuba | Cargo and passenger | 3,000 | Turbine-electric A.C. | 3,580 | 1920 |
| Elfay | Schooner yacht | 90 | Diesel-electric D.C. | 313 | 1920 |
| Guinevere | Schooner yacht | 550 | Diesel-electric D.C. | 1,160 | 1921 |
| Invincible | Cargo | 3,000 | Turbine-electric A.C. | ...... | Building |
| Archer | Cargo | 3,000 | Turbine-electric A.C. | ...... | Building |
| Independence | Cargo | 3,000 | Turbine-electric A.C. | ..... | Building |
| Alcyone | Schooner yacht | 350 | Diesel-electric D.C. | ...... | Building |
| Velero II | Yacht | 215 | Diesel-electric D.C. | ..... | Building |
| Fordonian | Cargo | 850 | Diesel-electric D.C. | 2,200 | Building |
| 8 cargo carriers | | 3,000 | Turbine-electric A.C. | 16,000 | Building |
| Poughkeepsie-Highland Ferry | Ferry | 200 | Diesel-electric D.C. | 640 DWC. | Building |

The motors and generators being pure shunt wound machines, the motor speed is adjusted to any value within the requirements by the voltage control system. In this system the generator and motor fields are separately excited (preferably from the same excitation source). The motor fields are excited at constant potential, and in one direction, whereas the generator field excitation is varied to obtain the motor speed desired. With this arrangement the speed of the motors is directly proportional to the generator voltage, and therefore any motor speed from zero to the maximum in either direction is obtained by merely manipulating the generator field rheostat (a common rheostat is used for all generators). Since the rheostat handles only the generator field current, which is 1 to 1½ per cent of the generator rating, the simplicity and economy of the control are obvious. With the type of rheostat used, the excitation of the generators may be varied from full excitation in one direction to full excitation in the opposite direction, without opening the field circuit, and therefore the ship can be brought from full speed ahead to full speed astern without opening a single circuit.

Reserve power in the event of casualty to prime movers is greater with this type of drive than with any other. On the basis of the power varying as the cube of the speed, a three-engine unit Diesel electric ship can make 88 per cent speed with two generators and 70 per cent speed with one generator.

The Diesel electric has the greatest range of application of any of the economical drives (geared turbine and turbine electric not excepted). Because of the inherent merits of this drive, it is very suitably applied to merchant ships, barges, river boats, lake boats, ferry boats, small coastwise vessels, yachts, fishing boats, Coast Guard cutters, cable-laying ships, and any ship within its capacity requiring refined control and economical operation over a wide range of speed.

As compared with any type of steam drive, the principal advantages of the Diesel electric are: fuel consumption; weight; control; considerably more reserve power in case of casualty to prime movers.

The principal advantages of the Diesel electric drive as compared with Diesel drive are:

**Reliability.**—Cylinder parts being thinner are not subjected to such high temperature strains in heads and liners as are the large slow-speed engines, and consequently there will be fewer breakages of these parts. Years of application and service demonstrate beyond a doubt the full reliability of electrical machinery.

**Maneuvering Ability and Control.**—The control is extremely simple, easily understood, and can be placed anywhere on the ship. The engines run at constant speed, and hence the engine reversing gear is eliminated.

**Weight.**—On a very conservative basis, the Diesel electric should show at least 100 pounds less per propeller shaft horse-power.

**Propeller Application.** — Propeller speed not restricted, and in the case of large ships one propeller would be used for Diesel electric, whereas, because of engine conditions, two would be used with direct Diesel.

**Reserve Power in Case of Casualty.**—Very much greater with Diesel electric.

**Maintenance.**—For reasons under "Reliability," the maintenance should be less. Furthermore, due to smaller parts and reserve power, repairs to Diesel electric engines can usually be made on board ship while under way, provided sea conditions permit. The engines for Diesel electric are designed and built on the same conservative basis as direct-drive Diesels and are not the high-speed, short-lived submarine type.

**Less Starting Air.**—Diesel electric requires starting air only during the initial start in port. Subsequent engines may be started electrically. No air is used during reversing, and consequently the air problem is reduced to simplest terms.

**Fuel Consumption.**—There would little difference in the net fuel oil and lubricating oil consumption as the increased efficiency of screw and the reduced strut losses, with the low-speed single-propeller Diesel electric, offset the twin-screw arrangement of the direct Diesel. From a standpoint of piston speed, the engines used for Diesel electric drive are no different than direct-connected engines. (The former exceeds the latter only in **revolutions per minute.**)

**Cost.**—The cost of Diesel electric in some cases is less than the cost of direct-connected Diesel drive on present-day figures and will generally show a greater gap when fully developed along standardized lines.

### General Summary for Merchant Ship Electric Drives

In the way of a summary relative to all types of electric propulsive equipments for merchant ships, the following salient features may be reviewed:

1. Electric drive is as reliable as any drive suitable for ship propulsion.
2. Maintenance and repairs should not exceed those of other drives, and in some cases should show a saving.
3. Electric drive is ideal for ship propulsion and will soon be recognized, if it is not already recognized, as a standard type along with the reciprocating-engine, geared-turbine and Diesel-engine drives.
4. Electrical machines have longer life than engines or geared turbines (drives) and do not decrease in efficiency with age.
5. Electric drive (Diesel electric) is as reliable as any economical drive, generally weighs less than any other drive, is as economical as the best, in most cases costs less than any other drive,* provides more reserve power in case of casualty to prime movers, and affords simplest and most flexible control.

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* It is predicted that future developments will bring the item of cost below that of any other drive.

# THE LARGEST GEARED MOTORSHIP

By R. Z. DICKIE

THE motorship Havelland is the first of two geared Diesel engine vessels built by Blohm & Voss for the Hamburg-Amerika Line. She has the following dimensions:

Length over-all, 465 feet.
Length between perpendiculars, 450 feet.
Beam, 58 feet.
Depth to main deck, 29 feet 6 inches.
Deadweight carrying capacity, 10,235 tons.
Draught, 25 feet 1-5/16 inches.
Gross tonnage, 6308.
Net tonnage, 3829.
Fuel bunker capacity, 1400 tons.

The ship is of the well-deck type, with a long poop and stern and two steel decks. Eight watertight bulkheads are fitted up to the main deck and accommodation is provided for twelve passengers.

The two propelling engines are of the 4-cycle M. A. N. type, built during the war at Augsburg Works of the Maschinenfabrik Augsburg Nurnberg for submarines. Blohm & Voss hold a license from the latter and have themselves built engines of the same type, two of which have for some years driven the electrical generators in the power station of the yard. The engines may be considered as representing the best class of high-speed Diesel engine built in Germany.

Each engine has ten cylinders, 530 mm. bore and stroke. For the maximum output of 3000 b. h. p. the normal speed is 319 r. p. m., but in the Havelland this is reduced to 230 r. p. m., corresponding to a piston speed of 840 feet per minute. The mean indicated pressure has been lowered from 8.3 to 7.2 atmospheres (103 pounds per square inch) and the corresponding shaft horsepower is 1650. Sea water is used for cooling the cylinders, and the pistons are oil cooled. All the water and oil discharge pipes are arranged external from the engine, and there is a free outflow. The control platform is about five feet above the floor level, and all controls for starting and reversing are operated from this point.

### Propeller Speed of 85 R. P. M.

The engines are connected to the propeller shaft by simple reduction gearing, the gears having been designed and manufactured by Blohm & Voss.

The gears have a ratio of 2.7 to 1 so that the speed of the propeller for full engine speed is 85 r. p. m., giving a good propeller efficiency. Before this installation was made, a full sized experimental plant was set up in the works. It was found that chief efforts had to be concentrated on overcoming the negative torsional stresses that are specially violent in the Diesel engine at the critical speed. This causes great variation in pressure on the teeth of the gearwheel, with a resultant wear, which is not conducive to long life. On the trial run the torsional strains in the shaft were measured photographically in front and behind the reduction gear by means of a special instrument, and finally a result was achieved which, it is said, is not inferior to that which is obtained in ordinary reduction gear utilized in connection with geared turbine machinery.

As might be anticipated in employing high speed Diesel engines, there is a considerable reduction in weight and space occupied as compared with the direct Diesel drive. It is estimated by the builders that 330 tons have been saved and 6000 cubic feet of space gained. It is also claimed that another 18,000 cubic feet could have been saved, but, owing to special reasons, it was not possible in the present instance.

### Auxiliary Machinery

The auxiliary machinery is electrically operated. There are three 180 b. h. p. Diesel engines, each driving a 95 kilowatt generator, developing current at 220 volts. Each of these auxiliary engines also drives a compressor through a clutch, which can be engaged or disengaged while the engine is running. Generally for the supply of starting air the compressors coupled direct to the main engine are sufficient. There are eight starting air reservoirs with a capacity of 6400 liters at a pressure of 60 atmospheres.

When the vessel is in service in a cold climate, the engine room, the tunnels and the cabins are heated with hot air, the temperature of which is raised by the exhaust from the main engines.

The trials of the Havelland were carried out on August 30, 1921, and fulfilled expectations. The engine installation operated successfully and it is stated that the reduction gear was practically noiseless. The fuel consumption was found to be .30 pound per i. h. p. The ship has made her maiden voyage and arrived recently at New Orleans without having experienced any trouble. A mean indicated horsepower of 3603 was developed, while the average speed attained was 11.12 knots, the vessel being light. The fuel consumption on this voyage worked out at .29 pound per i. h. p. hour.

Blohm & Voss gave very careful attention to the design of the reduction gears for the Havelland. Special machines were purchased for cutting the teeth, which were worked to limit gauges said to be so close that the variation was not greater than one one-thousandth of a millimeter. The housing is of cast iron split horizontal, the lower part being very massive and rigid. The gears work in an oil bath, the oil being under gravity pressure of about 35 feet. The propeller thrust is taken on a Michell bearing between the propeller and the gear casing.

When the Dow Pump & Diesel Engine Company of Oakland, California, engined the motorship Libby Maine and put in reduction gears which were of the Falk type, the size was decided by using gears of just twice the size as had formerly been used for steam turbines, reducing the tooth pressure by one-half to compensate for the intermittent impulses of the Diesel engines.

The foundation under the gearing and the engines was all in one piece and extended well forward of the engine and aft of the reduction gear.

The loss in the gearing is more than compensated by the increased propeller efficiency.

The motorship Havelland is a good illustration of applying a high-speed Diesel engine to a slow vessel.

TABLE I

4000 Tons Cargo Capacity—Length of Voyage, 12,000 Miles—Days in Port, 10

| Type of Vessel | Dimensions | Total Capacity D. W. T. | Tons Cargo | Total Oil Consumption Tons | Fresh Water Supplies, etc. | Displ. Net Reg. Tons | Capacity Cargo Space 1000 cu. ft. | Draft fully loaded | Power Engine | Knots | Cost of vessel 1000 kroner 1000 dollars | Cost of fuel provisions, oil, water, spare parts kroner dollars | Insurance depreciation, maintenance, loading kroner dollars | Cost per ton cargo kroner per T. dollars per T. | Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diesel-engined ship. Shelter deck with freeboard. Two shafts. Electric winches. | L 290′<br>B 42′<br>D 29′ | 4375 | 4000 | 245 | 95 | 6140<br>1525 | 220 | 22′8″ | 1350<br>IHP. | 10 | 2060<br>$295 | 62500<br>$8950 | 83700<br>$12000 | 36.5<br>$5.22 | |
| Turbines—Reduction gear. Shelter deck with freeboard. Oil-fired W. T. boilers. Steam winches. | L 322′<br>B 44′6″<br>D 29′ | 5075 | 4000 | 780 | 295 | 7130<br>1775 | 254 | 22′6″ | 1230<br>SHP. | 10 | 2250<br>$322 | 117050<br>16700 | 88500<br>$12650 | 50.2<br>$7.18 | |
| Triple expansion engines. Shelter deck with freeboard. Coal-fired Scotch boilers. Steam winches. | L 344′<br>B 46′9″<br>D 29′ | 5455 | 4000 | 1140 | 315 | 7825<br>1950 | 238 | 22′4″ | 1500<br>IHP. | 10 | 2290<br>$327 | 95950<br>13700 | 89700<br>12800 | 46.5<br>6.65 | |
| Sailing vessels with auxiliary engines. Five-mast schooner full rigged. | L 300′<br>B 47′6″<br>D 27′ | 4270 | 4000 | 180 | 90 | 6100<br>2100 | 200 | 22′4″ | 500<br>SHP. | 6.5 | 1730<br>$247 | 72900<br>10400 | 116800<br>16700 | 47.8<br>6.83 | 62% increase in time over steamer or Diesel ship |
| Sailing vessel five-mast schooner full rigged. | L 290′<br>B 37′6″<br>D 27′ | 4110 | 4000 | ... | 110 | 5800<br>2700 | 230 | 22′5″ | ... | 4.5 | 1400<br>$200 | 57600<br>8230 | 125500<br>18000 | 45.8<br>6.55 | 118% increase in time over steamer or Diesel ship |

TABLE II

Vessel of 2500 Tons Cargo Capacity—Voyage, 300 Miles—Days in Port, 4

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diesel-engined ship. Single deck with erections. Two shafts. Electric winches. | L 255′<br>B 38′<br>D 19′6″ | 2540 | 2500 | 5 | 35 | 3740<br>790 | 130 | 17′3″ | 1060<br>IHP. | 10 | 1580<br>226 | 2725<br>390 | 18415<br>2630 | 8.45<br>1.20 | |
| Steam turbines. Single deck with erections. Oil-fired W. T. boilers. Steam winches. | L 258′<br>B 38′6″<br>D 19′6″ | 2566 | 2500 | 24 | 42 | 3800<br>825 | 127 | 17′3″ | 890<br>SHP. | 10 | 1790<br>256 | 4695<br>670 | 18855<br>2700 | 9.45<br>1.35 | |
| Triple expansion engine. Single deck with erections. Coal-fired boilers. Steam winches. | L 262′<br>B 38′6″<br>D 19′6″ | 2567 | 2500 | 33 | 44 | 3850<br>825 | 119 | 17′3″ | 1010<br>IHP. | 10 | 1430<br>204 | 4145<br>593 | 18195<br>2600 | 8.95<br>1.28 | |
| Sailing vessels with auxiliary engines. Four-mast schooner full rigged. | L 250′<br>B 41′<br>D 23′ | 2550 | 2500 | 4 | 48 | 3750<br>1225 | 117 | 20′0″ | 350<br>SHP. | 6.5 | 1160<br>167 | [illegible]<br>815 | 21665<br>3090 | 10.95<br>1.57 | 88% increase in time over steamer or Diesel ship |
| Sailing vessel four-mast schooner full rigged. | L 245′<br>B 41′<br>D 23′ | 2540 | 2500 | ... | 40 | 3640<br>1550 | 135 | 20′1″ | .... | 4.5 | 960<br>137 | 5360<br>765 | 21625<br>3090 | 10.8<br>1.54 | 106% increase in time over steamer or Diesel ship |

Dollar values have been taken at rate of exchange of $.14 per kroner.

Two tables showing a comparison as to cost per ton of cargo carried between various drives for merchant freighters. This table was compiled by Burmeister & Wain, Copenhagen

# FIRE RISK IN OIL-BURNING STEAMERS

By W. S. DORAN

A CHANGE from coal fuel to oil-burning on fast passenger steamers in the trans-Atlantic service is being rapidly accomplished for two all-important reasons: first, the impossibility of coaling these ships in the short stay in port; and second, because of the unreliability of the fire-room staff and the inefficiency of the large numbers of stokers required to maintain a uniform steam supply to the ship's propelling machinery.

This second consideration in favor of oil fuel is now extending to steamers of smaller power and the change from coal to oil fuel is being rapidly accomplished, not only in this country, where the oil supply is relatively cheap and accessible, but coal-producing countries such as England are now turning to oil fuel because of labor troubles and the small number of boiler-room help required with this system.

Oil tankers and vessels serving our western and gulf coasts, where fuel oil is plentiful and easily obtainable, have for many years employed oil as fuel and the development of oil-burning devices has improved with the experience obtained.

Storage of immense supplies of fuel oil at important ports of all countries has also contributed to the reliability of bunker oil supply, so that we find such well-known steamships as the Aquitania, the Olympic, the Majestic, the Mauretania, the Berengaria, some of the Royal Mail Steam Packet Company's, the Canadian Pacific Company's, the American and Red Star and White Star steamers either changed or changing from coal to oil fuel.

The efficiency, cleanliness and reliability of uniform steam supply can now be accepted as favoring oil fuel.

Following the next step in oil-burning on passenger steamers and tankers, the fire hazard must be considered, as it is a fairly well-established fact that even with the best oil-burning boiler equipment and the most careful handling of the oil from the supply tanks to the burners, the oil must be heated and pumped under high pressures and temperatures, and valves break and gaskets blow out, and stuffing boxes leak and burners are sometimes momentarily extinguished and oil escapes to the tank tops or pump-room floor, and very often fires result.

Oil fires in any location are usually quick and active and spread rapidly, and are not controllable by ordinary means. Water is useless for this purpose, as the burning oil floats to the surface of the water, and the scope of the fire is in that manner extended to inaccessible pockets under the floor plates.

### An Efficient System

Oil as fuel having demonstrated its efficiency and the accompanying fire hazard being coincident with its use on board ship, the problem of how to reduce this risk has occupied the attention of engineers who have developed effective means of extinguishing oil fires in refineries, oil storage tanks and other vulnerable situations, and in conjunction with marine engineers a system which applies the best known means of extinguishing fires on land has been evolved which is equally effective on board ship. This may be briefly described as follows: two tanks containing chemicals are placed preferably where each will discharge its contents by gravity or artificial pressure. Each tank contains a chemical solution and each has separate discharge pipes which are led to points of distribution under the boiler-room floor plates to the oil pump rooms and such other vulnerable points where oil may lodge and become ignited.

When the two chemicals come together at the point of discharge, a foam is formed by combination of the two fluids which is from eight to ten times the volume of the two chemical solutions. This foam floats over the burning surfaces and a blanket of bubbles of extremely strong texture and containing carbonic acid gas immediately excludes the air, and in a few minutes the fire is extinguished.

### Remote Control

With this system every man may leave the boiler room, as the solutions are turned on to the fire by opening two valves which are placed at positions remote from the scene of the fire.

The rapidity with which an oil fire can be extinguished is instanced by the following letter written by the marine manager of a large oil company which has equipped about twenty of their tankers with the Foamite Firefoam system:

In accordance with your request, this is to advise that on July 28, 1921, a fire, due to the accumulation of oil in the bilges of the fire-room, occurred on our steamship Fred W. Weller while at anchor in the North River, which was discovered on inspection by one of the ship's officers.

The Foamite System was immediately employed and the fire extinguished within four minutes, which is indeed an indication of the rapid and satisfactory results obtained from this system.

The steamships named in this article as having been equipped for fuel oil-burning are also fitted or are being supplied with the Foamite fire extinguishing systems of the permanent installation type, which seems to indicate the necessity of making one the natural development of the other.

What the sprinkler system has done to reduce the fire loss on land can be duplicated by the installation of Foamite on oil-burning steamships. The following statement from circular letter of Boston Manufacturers' Mutual Fire Insurance Company, November, 1921, illustrates this contention:

The letter quoted above from the manager of the oil company demonstrates how the fire loss and possible life loss can be controlled on board ship.

The recent disastrous boiler-room oil fire on one of the tankers of Andrew Weir, Limited, at Liverpool, shows how difficult is the task of extinguishing such a fire when only the ordinary means are available.

When a building or a wharf is equipped with sprinklers and fire hydrants meeting the requirements of the insurance company, the rates go down according to the amount of protection given.

When an oil-burning steamer is equipped with an effective fire extinguishing system, the underwriters' rates should go down, but up to the present writing such equipment has not affected rates.

Is this quite right? And is it not a proper food for thought by the steamship owner and the underwriter?

**The Effect of Sprinkler Protection Upon the Loss Ratio**

| | Amount | Losses | Rate* |
|---|---|---|---|
| 1850-1875—Sprinklers, none | $ 406,284,084 | $1,027,536.98 | $0.2529 |
| 1876-1895—Sprinklers being installed | 1,551,259,471 | 2,809,203.32 | 0.1810 |
| 1896-1920—Sprinklers nearly comp'd | 8,519,201,015 | 3,683,668.53 | 0.0432 |
| Seventy years | $10,476,744,570 | $7,520,408.83 | $0.0717 |

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* Rate of loss to amount written, cents per $100.

# EUROPEAN MARINE NOTES

## Impressions of a Californian Abroad

TO the American shipowner perhaps the most interesting recent development in the European shipping situation is the attempt being made by Portugal to introduce discriminating customs duties and preferential treatment of Portuguese shipping.

In August, 1921, at all ports of Portugal the officials began demanding gold in payment for wharf, anchorage and water dues from all foreign bottoms, while Portuguese bottoms are still allowed to pay in paper. This idea has been amplified and stabilized by a decree recently issued that all port dues, including customs dues in Portuguese ports, on and after January 1, 1922, shall be paid by all foreign ships in gold on a basis of 4.50 Portuguese escudos to the pound sterling. Portugal and Norway have had considerable rivalry in shipping matters recently, and so Norwegian vessels for some time have been compelled to pay five-fold customs duties. This so-called "gold decree" puts Norwegian shipping men at such a disadvantage that the customs duties on a cargo may often exceed the gross freight earnings.

Coal carried from Welsh ports to Portugal in Norwegian bottoms would be charged under this decree 11 shillings per ton, and the present freight rate under favorable conditions is 11/6 per ton.

Vigorous protests from many governments have been entered at Lisbon, but the Portuguese government seems to be all the more determined to keep on with the policy of discriminating duties and has decreed that Portuguese ships shall have a 10 to 20 per cent reduction on all dues and charges at custom houses and a 10 per cent reduction on all municipal and state taxes, and on all port dues.

It will be interesting, in view of our own Merchant Marine Act and the refusal of two executives to enforce some of its provisions, to watch the working of this policy of discrimination in Portugal.

Many British ship operators were caught by the freezing of the Danube. Some sixty ocean steamers that had gone in through the Black Sea for grain cargoes at lower Danube ports have been imprisoned, probably for the winter. This, while it makes for loss to the owners of these vessels, will not probably be much regretted by the shipping fraternity at large, they seeing possible occupation for some of the idle tonnage now tied up in British rivers.

At the opening of 1922 shipbuilding conditions seem to be improving in the United Kingdom. In a number of instances work has been authorized on suspended contracts for passenger liners. Some of the old conservative shipping men who unloaded tonnage at the peak prices are now re-entering the game and acquiring good vessels at present low prices. This is a very fair indication that these men are expecting normal and more favorable conditions in the near future.

Labor is much more willing to be reasonable and industrious than in January, 1921; in fact, the leaders of the principal shipbuilding trades are becoming very much alarmed on account of the falling away of membership rolls and the therefore impossible situation which faces them in providing funds for strike and unemployment benefits. So the resumption of work on a few important contracts is hailed with great joy by both workmen and employers.

Most of the German shipping companies are largely increasing their capital through sale of stock issues. This is made necessary by the constant fall of the value of the mark. German shipbuilding is on the increase, and several foreign orders for ships have recently been placed, notably one from the Chilean government for two 2000-ton cargo steamers to be built at Hamburg by the Deutsche Werf. If my information is correct, this company is to be reorganized with the assistance of international capital and has several large foreign orders awaiting the consummation of that change.

Subsidies loom large on the American maritime horizon, and our readers will be interested in a change just effected in a French subsidy.

The Compagnie de Chargeurs Reunis, in consideration of running—first, a monthly mail steamer service between Havre and Matadi with subsidiary services on African rivers; and second, a monthly cargo steamer service from Dunkirk to Matadi—have been receiving since 1906 an annual grant of 230,000 francs for the mail service and 36,000 francs for the river service. This convention terminates in 1923, and it is proposed now to change the French terminal of the mail service from Havre to Bordeaux; to pay for carriage of mail bags and postal employes at commercial rates less 30 per cent; and to pay a subsidy of 15,000 francs per voyage, and increase the river service annual subsidy from 36,000 to 60,000 francs.

French shipowners are vehemently protesting against the application of the eight-hour law and some of the provisions of the French maritime sanitary commission. They are also calling for a revision of the regulations governing immigration.

On December 20, 1921, Brussels opened its new harbor works with canal connection to deep water, so that vessels of not more than 13.5 feet draft can now come up to the city. In a short time the depth of the canal will be increased to accommodate 19.5 feet draft. The limiting dimensions as to length and beam are 344 feet and 46 feet, respectively. These limits permit a steamer of about 2500 gross registered tonnage to navigate the canal safely, if she be properly designed for that tonnage on 19 feet draft. Of all the thousands of steel steamers built by the United States Shipping Board none could navigate this important canal fully loaded, and its navigation on less than full load could be made only by the Lake type. This fact illustrates the need of special type of vessels for special service and is an indication of possible future activity for our shipyards.

An interesting sidelight on the real condition of British shipping during 1921 is given in Lord Inchcape's annual report to the P. and O. stockholders. Commenting on the activity of the company's steamers, he shows that 444 steamers employing 45,912 men in their crews covered 15,345,081 nautical miles, entered port 25,315 times, and transported 13,236,981 tons of cargo, 188,575 animals, and 2,111,564 passengers. This would appear on the surface to be a very flourishing business. However, it is shown in the same report that eleven of these steamers, capable of handling 101,000 tons of measurement cargo, were dispatched on the London-Australia trade with 68,000 tons of space unoccupied. There were laid up out of business during that period 1,117,092 net tons of steamers, according to Lord Inchcape, and this experience on the London-Australia run shows that probably the majority of the large British freighters in use were running more than 50 per cent idle. This condition could not have lasted long without meaning ruin for even the most strongly intrenched companies, and the trend, however small, toward better conditions is bringing relief to many anxious shipowners.

# THE BLOW-OFF COCK

## THE "CHIEF" EXPLODES

UNDER the above heading, Seamen's Journal, the weekly voice of the Sailors' Union of the Pacific, publishes an editorial answering the remarks of Sea Flame, as set forth on page 731, December issue of Pacific Marine Review. Inasmuch as the "Blow-off Cock" section is dedicated for the purposes of a public forum in which every side of all questions shall find ventilation for its opinions, we are reproducing here a large part of this editorial together with the reply of Sea Flame:

"The most recent attack" (on the LaFollette Seamen's Act of 1915) "appears, as usually, under the familiar caption of 'High Operating Costs,' in the current issue of the Pacific Marine Review. Presumably written by a chief engineer with 'an experience covering fifty years,' the article is submitted under the inappropriate nom de plume, 'Sea Flame.'

"We say inappropriate because the writer espouses a cause entirely foreign in spirit and wholly contrary to the traditions of the sea. He is apparently endeavoring to extinguish the flame of the sea by seeking to enslave the liberty loving American seamen into the clutches of slavery or at least 'military' discipline, as he says the 'average American does not submit to discipline gracefully, unless that discipline is enforced by military methods.'

"One way which he 'believes might be taken advantage of, and that would be to make the merchant marine an auxiliary navy only so far as the crew goes.' He proposes that the operator or owner of the vessel pay to the Navy Department a fixed amount for services of the crew, the crews to be under naval regulations, but the operation of the vessel entirely under the control of the private owner.

"Is the Sea Flame entirely ignorant of the fact that, instead of presenting a clear-cut method by which the shipowner may effect a substantial decrease in the operating cost of a vessel (under which illusion the 'Chief' is evidently laboring), he is unconsciously advocating a plan whereby the efficiency of the personnel would be greatly lowered and the cost of operation increased by three-fold?

"Experience has proven that at least three times as many men are required to man a merchant ship when operated by a naval crew as when operated by merchant seamen. That is the record of the ships which were taken over and manned by the Navy in the last war. This increase was in the operating crews alone and was not at all due to the carrying of the gun crews.

. . . . . . . . . .

"Of course,for reasons best known to himself, the 'Chief' fails to inform his readers why the Seamen's Act will never work with the average deep-water crew. And, presumably, for the same reasons, he neglects to explain why an absolute repeal of the law is necessary.

"Nevertheless, his main complaint seems to be lodged on that section of the LaFollette Seamen's Act which provides that every seaman on a vessel of the United States shall be entitled to receive on demand from the master of the vessel on which he belongs one-half of the wages which he shall have then earned at every port where such vessel, after the voyage has been commenced, shall load or deliver cargo before the voyage is ended.

"This is the section of the law that the man with 'fifty years' experience' at sea refers to as containing the most glaring defects of the act.

"Has the 'Chief' entirely forgotten that the vicious crimping system was a long-lived abuse by which many a seaman was fleeced of his wages through the advance system long before the same were earned?

. . . . . . . . . .

"To actually destroy the crimping system the seaman had to be made a free man. If he chooses to leave a vessel in any safe harbor he must be within his right and he must, also, have the right to draw at least half of the wages due him in any harbor. To prohibit advance and abolish imprisonment for desertion would not have liberated the seaman unless he would be permitted to collect a part of his earned wages.

"The American who had lived in an American home and attended an American school could, of course, not be induced to accept this kind of a life. White men from anywhere refused to accept it, and the crews of the American vessels grew to be poorer and poorer in quality, and the yellow men were destined finally to triumph.

"Let the control over the sea pass from the white to the yellow race and humiliation and danger will some day be suffered by our people. We must have seamen of our own blood and of our own nation, but we cannot have them unless the ideals and standards nursed in an American school find expression in sea life.

"This is the aim of the LaFollette Seamen's Act of 1915. Had it been properly enforced it would have fully accomplished the equalization of wage cost that the 'Chief' is referring to.

"Before condemning or mutilating the law, please give it your consideration and, perhaps, a little study combined with patience, will make the 'Chief' see rosy colors where all is black before his eyes at present."

## PATRIOTISM AND THE SEAMEN'S BILL

By SEA FLAME

THE editor of the Seamen's Journal in a recent issue devotes a full page in reply to Sea Flame's article in Pacific Marine Review for December, the subject of course being the economical operation of our merchant marine.

First, the sailor editor seems to doubt the genuineness of Sea Flame's work and intimates that the nom de plume is inappropriate, accusing the writer of trying to extinguish the flame of sea liberty. To the first charge will say that Sea Flame has never been approached by any owner in regard to his writings. Neither are they instigated or influenced by any combination of capital, and it is doubted if anyone on "California Street" even knows who Sea Flame is. This is in answer to the hint that these articles are "presumably written by a chief engineer."

The editor of the Seamen's Journal charges the writer with unconsciously advocating a plan whereby efficiency would be lowered and costs increased by adopting a semi-naval policy in manning our ships. In answer to this, the writer will point out that there are lines in Europe which operate under this plan, and that the vessels of these lines are models in the way of discipline, wages, treatment, etc. Sea Flame also would dispute the assertion that three times as many men were needed to operate merchant ships under the Navy Department during the late war. Such was not the case. A few more men were carried, it is true, but war-time conditions prevailed. In time of peace no such increase would be necessary.

The editor of the Seamen's Journal also states that these extra men would take away from the carrying capacity of the vessel. The writer contradicts this with the answer that little or no increase in present quarters would be needed.

The sailor editor also objects to any change in the present "grub" serving, showing at once that my attempt to enforce payment for wasted food meets with the disapproval of the Seamen's Union.

He also quotes the writer on the needed repeal of the LaFollette Act, but accuses Sea Flame of withholding information as to why it should be repealed, and particularly calls attention to the "half-wages" clause against which Sea Flame inveighs. Sea Flame still maintains that this law is pernicious and detrimental to proper discipline and the physical well-being of the crew. If a vote on this law were taken among masters, mates, engineers, pursers and stewards, it is believed that over 90 per cent would vote for its repeal. If the vote could be extended to United States consular officers in foreign ports, agents of vessels, and the authorities of those ports, probably the majority would be higher.

Space prevents the writer from going too far, but one incident on one Shipping Board steamer will suffice. This vessel had occasion to call at a river port in a South American republic. She arrived about 8 a. m.; had 100 tons of freight to take on; and was to leave at noon the following day. Some of the crew asked the master for money, but were told that, owing to the short lay, none could be had; that at the next stopping place, however, money would be available. This, however, did not suit the liberty-loving crew. Two of them went ashore and complained to the American consul, who at once sent off word to the master that a number of the crew had made a "demand" for half of the wages due, and that it must be advanced. The master, after a deal of trouble and expense, got the money, the men being given it that evening. Did we go to sea at noon next day? We did not. The steamer sailed twenty hours late, with a number of the crew too drunk to do their work. This is only one incident to show the evils of this "half-pay due" scheme. Experience shows that the men in very rare instances buy any clothing or other things useful or ornamental. They know there are tobacco and clothes in the slop chest.

But to return to the Seamen's Journal editorial. The editor asks if the Chief has forgotten the crimping system of long ago. No, the Chief has not, but he does know that crimping was a thing of the past long before the LaFollette Act was ever thought of. The sailor editor makes a long statement of the awful conditions existing before 1915, the date of the LaFollette Act. As a matter of fact, that act is purely and only a Seamen's Union measure and has been one of the prime factors in destroying the advancement of our merchant marine. And the writer will go further and state that it is an un-American measure formulated in the minds of foreign born seamen. Sea Flame has nothing but praise to extend to a good law, but any law must give both sides an equal chance. The LaFollette Act does not protect the shipowners, as it is, or was until lately, practically impossible to punish anyone more than by the forfeiture of a couple of days' pay for neglect of duty. The owner might lose a thousand dollars by delay of the vessel because of a drunken crew not coming on board. This is why Sea Flame advocates enforcement of laws so that both sides may be protected.

However, without wishing to enter into any discussion of nationality, will say that mighty few American born follow the sea and those that tried to before the late curbing of the foreign-dominated Marine Union were for the most part made miserable by the balance of the crew, which as a rule was largely foreign born. However, the whole matter will be settled when there are sixty men clamoring for one man's job, as it will obviously be impossible for our merchant marine to operate under existing laws. Patriotism is a splendid sentiment, but American ship operators will not keep their fleets running at a loss so that the "high standard of American seamen" can be maintained for an 80 per cent foreign born crew. Sea Flame does not mean to imply that all seafaring men are drunken, dissolute, improvident wasters, but many are, and the LaFollette Act appears to have been evolved for that class.

# BOOK REVIEWS

**A Life of George Westinghouse, by Henry G. Prout.** 875 pages, with numerous full page illustrations. Bound in blue buckram with gold stampings. Published by Charles Scribner's Sons, New York. Price $2.50.

This volume is the result of a determination on the part of the officers and members of the American Society of Mechanical Engineers to publish for the benefit of Young America the lives of some of the great industrial and engineering figures which have been identified with this society.

George Westinghouse, born in 1846 and living in active engineering work until 1914, was a very commanding figure in the great days of American industrial and manufacturing progress during the last quarter of the nineteenth century. His manufacturing enterprises were operated all over the earth and included practically every branch of electrical and mechanical engineering. He had over 350 patents in the United States Patent Office alone. Every one of these patents was taken out covering work to be done in his own shops and not for speculative purposes. His first patent was for a rotary steam engine. This engine never came to any practical use as a prime mover, but like nearly everything else that Westinghouse handled it was developed into a mechanism which formed the basis for a separate industry and became a matter of considerable profit. He simply turned his engine around and made an excellent water meter out of it.

In 1865 he turned his attention to railroads and in 1867, 1868 and 1869 he was taking out patents for a railroad frog and for a car replacer. Then on April 13, 1869, he laid the foundation of a wonderful fortune and fame with the basic patent for the Westinghouse airbrake. It will be noted that at this time he was twenty-two years old. The manufacture of the Westinghouse brake and its application to railroading, together with the patenting and manufacturing of many signalling and interlocking devices and systems for railroads, both in the United States and in European countries, filled his time with prodigious activity until the year 1890 when, this business of airbrakes and steam railroading having been pretty well standardized, he began to turn his attention to electric matters and the electric transmission of energy.

During the years 1880 to 1890, inclusive, he had taken out a patent every month; in fact, for the forty-eight years of his active life as an inventor he took out a patent every month and a half. He had become interested in the '80s in the production and distribution of natural gas and later developed and built many gas engines of great size. In marine matters his name is associated with that of Admiral Melville of the United States Navy and Mr. McAlpin in the development of the floating frame reduction gear for use in turbo-driven ships. In short, here was a life that was the embodiment of Yankee push and energy backed by one of the most fertile brains that the engineering world has ever known.

It is rather a remarkable fact and speaks volumes for the man's simple devotion to purpose that while he held degrees from many colleges and universities, both in United States and in Europe, and had been decorated by many crowned heads, to the end he remained George Westinghouse and none of his most ardent admirers ever thought of speaking of him in any other way.

The volume under review sets forth the entire life of Westinghouse in a very intimate and friendly fashion, particularly from an engineering angle, and should be especially valuable to young engineering students in that the trends of thought and the apparent source of inventive ideas are so faithfully portrayed by the author who, acting as an editor, in a very graceful way weaves into the story the reminiscences of the most intimate friends of Westinghouse and his closest associates in business and invention, many of whom are still living.

**Wharf Management, Stevedoring and Storage, by Roy S. MacElwee and Thomas R. Taylor.** 350 pages, 95 illustrations, numerous diagrams and tables. Bound in red buckram with gold stampings. Published by D. Appleton & Company, New York.

This volume is the fifth of a series dealing with the business of ocean shipping and transportation. It is a very timely volume and much needed in American merchant marine work. Roy S. MacElwee was formerly director of the United States Bureau of Foreign and Domestic Commerce and is now dean of the School of Foreign Service of the Georgetown University. Thomas R. Taylor is assistant director of the United States Bureau of Foreign and Domestic Commerce.

So far as the writer knows, this is the first effort to set down in printed volume the loading and dispatch of ships from the administrative standpoint, and, as the author's preface sets forth, the volume is started on its adventurous voyage in the hope that it will "blaze the trail to a closer and more scientific study of the problem."

There can be no doubt in the mind of anyone who has made even a superficial survey of the marine situation and also of the railroad problem that great economies can be effected by proper terminal management, and some go so far as to say that successful competition by the American merchant marine on the high seas is dependent upon our solution of the prompt and efficient dispatch of vessels in ports. There has been not a little complaint on the part of American and European underwriters at the improper loading and stowage of cargo in American ships, so that this book should be of great value to shipping men in general.

This series of books on ocean shipping and transportation was intended as manuals to "assist young men in training for the shipping business," and so far as we are able to judge, they are admirably adapted for this purpose and combined with practical experience and the necessary knowledge of local conditions can be used for laying a foundation on which to build up foreign trading management. The volume covers every phase of marine terminal activity, including accounting, wharf office organization, ships' auxiliaries, wharf cranes, warehouses, stowage, and delivery from wharves.

**With Beatty in the North Sea, by Filson Young.** 338 pages, illustrations; blue buckram with gold stampings. Little, Brown & Co., Boston. Price $5 net.

Filson Young, as an intelligence officer of the British Navy with the rank of lieutenant, served on Admiral Beatty's flagship, the Lion, for the six months which included the battle of the Doggerbank. In a very engaging, talented manner he sets forth the incidents and the life on the battle-cruiser squadron, of which he was an eye witness and a participant, and while giving full credit to Admiral Beatty and his staff officers and their work on the squadron, criticises very unsparingly the British admiralty and the British naval policy, showing how the viewpoint of the admiralty was altered by the experiences of the battle-cruiser squadron and how Beatty's work with that squadron discovered the naval shortcomings and initiated the means taken to overcome them.

A very intimate picture of a modern naval engagement is given, and this picture is all the more interesting in that Lieutenant Young witnessed it from the fighting top of the Lion and from the fact that it was the first time in history that modern superdreadnoughts had met in action. The book may consequently become a very valuable historical memoir, since the present trend seems to indicate that all superdreadnoughts will be scrapped.

**Fifty Years of Electricity, the Memories of an Electrical Engineer, by J. A. Fleming.** 352 pages, very copiously illustrated with full page plates and figures. Green buckram binding, gold stampings. Published by the Wireless Press, Ltd., 326 Broadway, New York.

John Ambrose Fleming is the University Professor of Electrical Engineering in the University of London. He was born in Lancaster, England, November 29, 1849. His active work would, therefore, cover the fifty years from 1870 to 1920, the half-century which has seen the greatest advance in the technique of electrical engineering, in which Professor Fleming himself has had a very active and distinguished participation.

To quote the foreword by the author, "This book makes no claim whatever to be a systematic treatise of electricity or electrical engineering, but is simply intended as an attempt to place before the intelligent general reader a fairly comprehensive view of the chief triumphs of applied electricity during the last half-century." It will also undoubtedly be of great assistance in enabling electrical students to obtain a preliminary outline of subjects which they will study in greater detail in other textbooks and in their laboratory experiences. With this intention in view, Professor Fleming in his clear, lucid style and in a non-technical manner sets forth the modern history of electrical engineering. The book, therefore, should be of great value to the seeker after general knowledge, because electricity in one form or another touches so closely the every-day life of modern civilized man and has become such a servant to mankind that no person can pretend to be educated who has not become somewhat acquainted with the manner in which this service is rendered.

In the introduction the progress of electrical engineering up to the year 1870 is sketched in outline. The balance of the book is divided into seven chapters, each one of which carries a grand division of electrical engineering through from 1870 to 1920. Chapter I deals with telegraphs and telephones; Chapter II with dynamo-electric machinery; Chapter III with electric lamps and lighting; Chapter IV with electric heating; Chapter V with electric power stations and the transmission of power; Chapter VI with electric theory and measurements; Chapter VII with wireless telegraphy and telephony.

The publishers of this volume are to be congratulated on the attractive letterpress and the excellent make-up of the book, which will recommend it to the general reader.

# MARINE BOILERS

## Some Hints on Their Operation and Maintenance

By SEA FLAME

ECONOMICAL operation of marine boilers consists not only in fuel saving, but in keeping repair bills at the lowest possible figure. At this time economy means the continued holding on the oceans the great fleet now under the American flag. Therefore special stress must be laid on saving, not only fuel, but expense.

That the proper care of boilers will increase their efficiency is indisputable. Thousands of words have been written on the design and construction of boilers, and many and long have been the arguments put forward in favor of different types, both watertube and shell. Treatises have been published on fuel handling; on draft pressure and on stack temperatures; so the writer will not in this article give any specific formula or rules, but will say that an application of horse sense is as necessary in getting good results out of a marine boiler as it is to get the highest dynamic output from any source of power.

It should always be kept in mind that a boiler, be it watertube or other type, is one of the prime units in an installation for power purposes. Also that a boiler is a delicate piece of machinery, and should be cared for accordingly. Some engineers base their preferences for Scotch or shell type boilers on the idea that they will stand rougher usage than those of the watertube kind. This seems to be an admission that the boiler is looked upon as a unit supposed to stand neglect and incompetence without failure. This attitude, however, will not stand, as experience has shown that the more careful an engineer is of his boilers the better for the owner's bank account.

Economy of time is considerable of an element in handling boilers. If an engineer can keep the boilers of an average steamship going for six months without a lay-off for scaling and cleaning, he is surely a better producer than one who can only get two or three months' operation between lay-ups. Old hands may say it is not possible to run a boiler for six months. The writer believes to the contrary and claims with oil-fired boilers looked after properly, an absolutely tight condenser, and all make-up feed of distilled water, that a boiler can be kept continuously in operation for an indefinite period. But to achieve this result careful treatment is necessary.

Unfortunately there is a class of engineers who seem to regard the boilers as of not much importance and leave their management to the second assistant. Should things go wrong the blame is often laid to the boilermaker. He did a poor job; the design was faulty; boilers not large enough; firemen incompetent. These and similar excuses are made, when as a matter of fact had better care been exercised the troubles would not have happened.

### Clean Fire Rooms

Too much stress cannot be laid on the need of absolute cleanliness in and around boilers. Do not permit small leaks to become great ones. Anything kept tidy and neat is generally efficient. A slovenly kept fire room means waste. Drips from little valves in time make losses that are noticeable. Little drips of fuel oil not only make a mess, but mean waste.

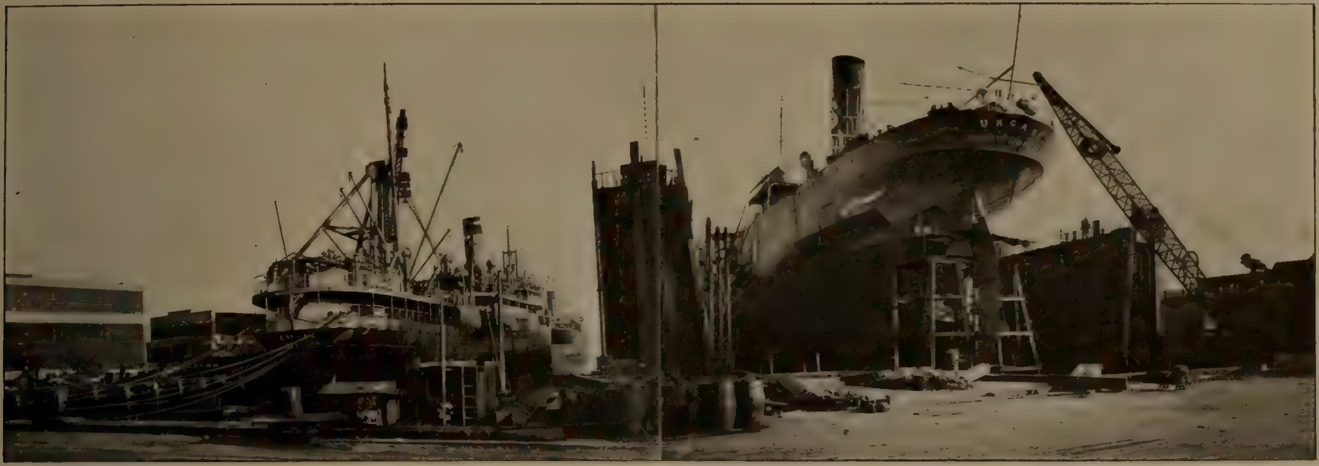
### Watch the Leaks

See to it that all blow-off valves are tight; that all stems of checks do not leak; that joints around fuel oil system are kept in good order; that no small leaks are around handhole and manhole plates; that furnace fronts are kept tight, so that cold air will not enter except through proper place, and that when fires are out no air can get in; that joints around tube doors are tight; that safety valves do not leak; that joints on feed lines are tight, and that feed water is kept as hot as possible; that brick work in watertube boilers does not settle and crack, allowing drafts to enter back of fires; that tubes are kept clear of soot by regularly dusing off with soot blowers or other means; keep pressures steady.

### Feed Water

But of the utmost importance is pure water for feed. With proper care no salt or alkali or other foreign matter should reach the inside of a boiler. Given pure water to begin with, and kept so, 50 per cent of the boiler troubles will cease to exist. It will at once be said that it is not possible to do this. The writer claims it is easy. If proper care is exercised, three tons—or, say, 750 gallons—of water should be the maximum loss in twenty-four hours with an every-day 3000 I. H. P. plant. This amount can be made up easily with almost any of the evaporators supplied, and should not require more than two barrels extra fuel oil for the work. These two barrels will be more than saved by increased efficiency, as is easily understood. If all the many little leaks are stopped, the elusive heat unit will be captured; boilers will work better with pure water, and lessening of priming and other evils will help to make the lot of the engineer a happier one.

# FEDERAL SHIPBUILDING YARD BUSY

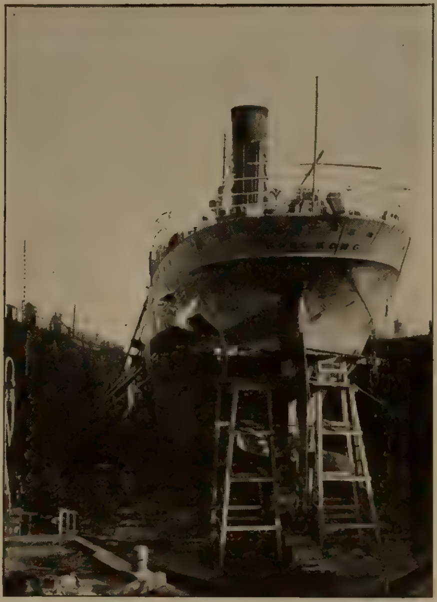


Drydock and outfitting wharf of the Federal Shipbuilding Company at Kearny, New Jersey. The Pacific Steamship Company's new steamer Ruth Alexander is shown in the left foreground at the outfitting wharf

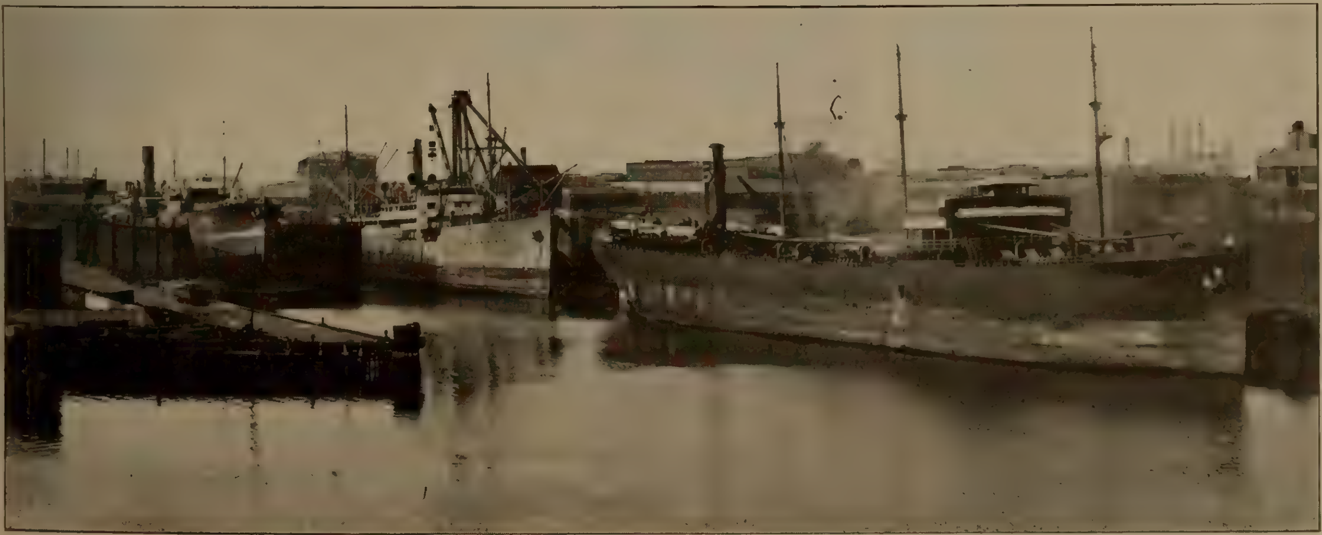
THE shipyard of the Federal Shipbuilding Company at Kearny, New Jersey, occupies a strategic point adjacent to the lower harbor of New York on the Hackensack River at the head of Newark Bay, where it draws easily upon the combined labor market of Manhattan, Brooklyn, Jersey City and Newark.

The company was incorporated on July 24, 1917, and immediately proceeded to establish a thoroughly modern shipyard of twelve ways and with up-to-date shop equipment ample to take care of these ways working at their full capacity. A complete description of the plant and of its record in shipbuilding during the war emergency period and later for private account will be found in the issue of Pacific Marine Review for March, 1921, on page 170. At that time Federal were installing a new 10,000-ton floating drydock, and it is with the activities of this drydock and the facilities of the yard as a repair organization that we are principally interested at the present time.

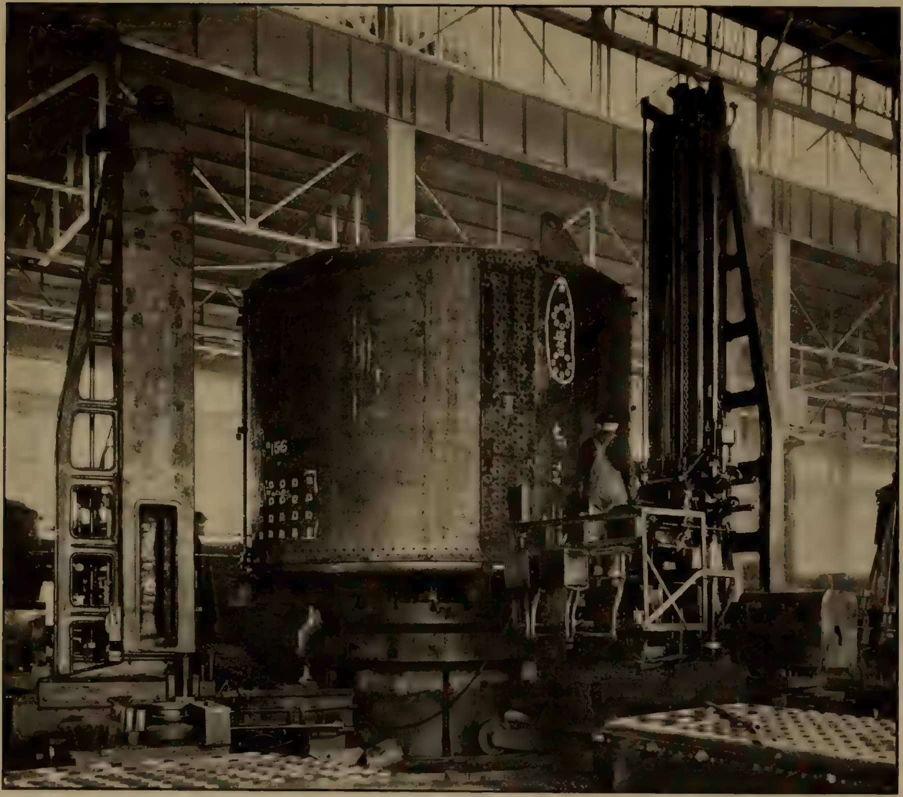
This is particularly so since the Pacific Steamship Company's new passenger steamship Ruth Alexander (formerly Callao) is now being reconditioned there. This steamer, formerly a German passenger liner, was taken over by the United States as a troop transport during the war. The Pacific Steamship Company is now preparing this vessel for the run from Seattle via San Francisco to Los Angeles. She is a little larger than the Nanking and will be fitted out with every modern convenience, the company having announced its intention of making her the finest passenger liner on the coast run. She will probably make her first voyage under the Admiral flag about the middle of February. At that time she will be put on a special cruise from New York via Havana and Panama to Los Angeles, San Francisco and Seattle, after which she will enter the Pacific coastwise service.



Close-up of the stern of Standard Oil Company's tanker Uncas in the 10,000-ton floating dock of the Federal Shipbuilding Company.



General view of the waterfront of the Federal Shipbuilding Company on the Hackensack River. Steamers in view from right to left are: tanker Astral, passenger steamer Ruth Alexander (formerly Callao), and on the dock the tanker Uncas



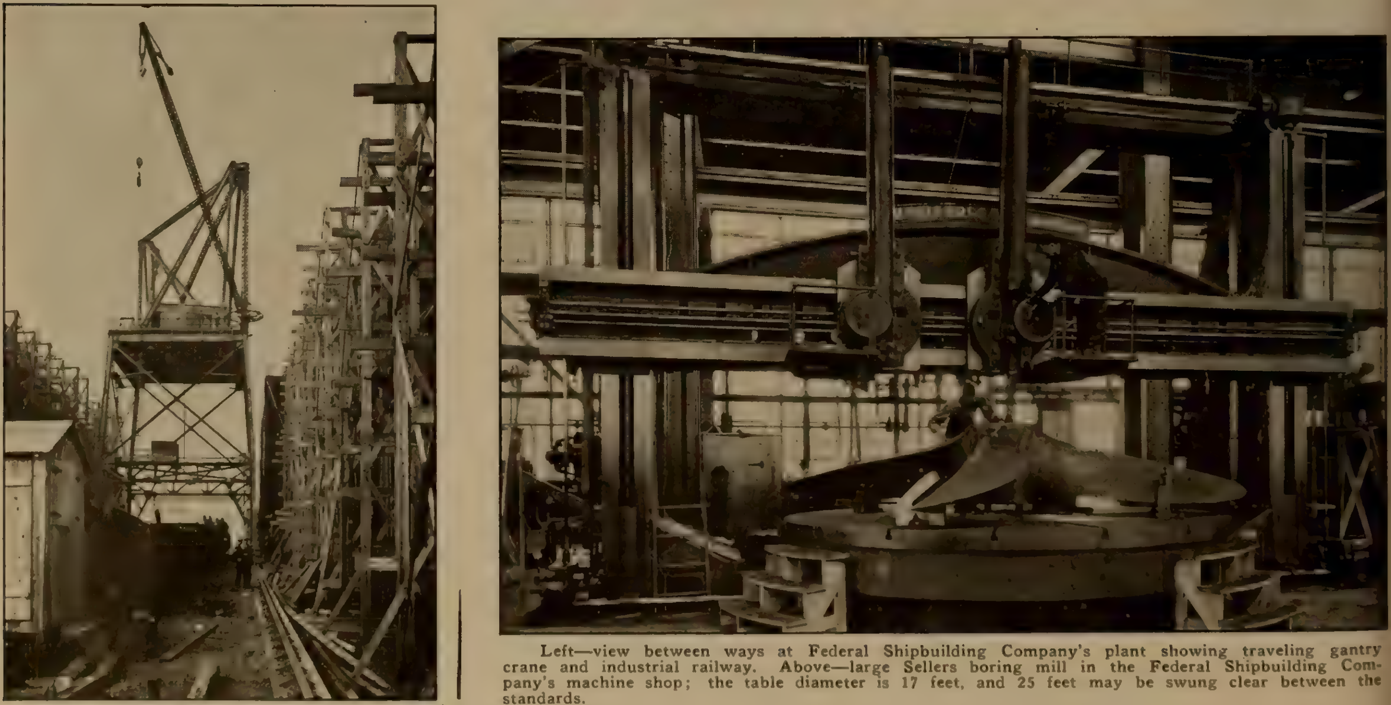
View in the Federal Shipbuilding Company's boiler shops showing special tools designed for drilling the shells of Scotch boilers

The Callao was a coal-burner. The Ruth Alexander will burn oil. Her engines and boiler equipment were in very good shape, but as it is desirable to maintain a high sea speed and as her engines are capable of taking more steam than could be supplied by the original boiler plant, two additional Babcock & Wilcox boilers are being installed with a total heating surface of 54,000 square feet. The White system of oil-burning is to be used, and it is confidently expected that as refitted the Ruth Alexander will show at least a knot more speed at sea than did the Callao. The change to fuel oil involved the installation of settling tanks and the fitting of her double bottom with suitable piping, vent ducts and oiltight riveting, to serve as fuel oil tank.

All of the passenger accommodations are being reconditioned and a number of new cabins added. All staterooms will have hot and cold running water, thermos bottles, reading lamps for berths, and in general all modern marine conveniences. The public rooms on this ship are all finished with a wainscot of beautiful inlaid tiling and are furnished in a style that will make them decidedly attractive to Pacific Coast travelers.

It is reported that the work on the Ruth Alexander will cost about $200,000.

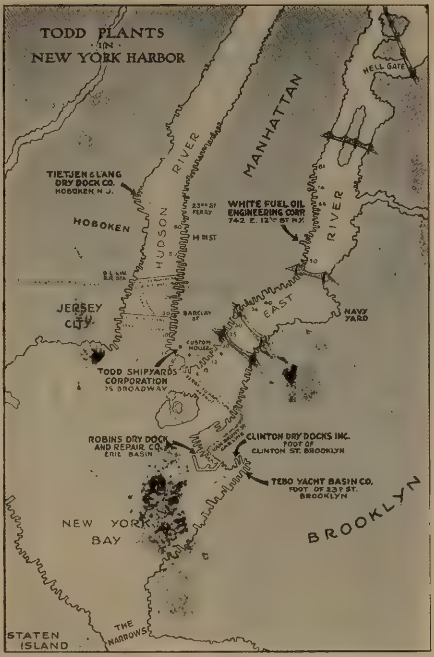
Another vessel in which Pacific Coast readers will be interested was at the outfitting dock of the Federal Shipbuilding Company recently. This was the tanker Astral, a vessel of 12,000 tons deadweight, built by the Bethlehem Shipbuilding Corporation, Union Plant, San Francisco, in 1916, and owned by the Standard Transportation Company. Extensive damage repairs were made. The tanker Uncas, of the Standard Oil Company of New York, also has been undergoing extensive repairs, which required two weeks on drydock, at a cost of $50,000 to $60,000; and work has been done recently on the following vessels in New York harbor: Robin Goodfellow, Robin Adair, Fairfield City, Pinar de Rio, Bantu and Charlton Hall. The following vessels were to undergo docking and repairs: Crewe Hall, Mobile City, Steel Ranger, Chattanooga City and Bessemer City.



Left—view between ways at Federal Shipbuilding Company's plant showing traveling gantry crane and industrial railway. Above—large Sellers boring mill in the Federal Shipbuilding Company's machine shop; the table diameter is 17 feet, and 25 feet may be swung clear between the standards.

# DOCKING A BOTTOMLESS TANKER

Remarkable photograph looking up and out through the shell plating of the tanker F. D. Asche on the graving dock at the Robins Drydock & Repair Company plant of the Todd Shipyards Corporation


TODD PLANTS
IN
NEW YORK HARBOR
HELL GATE
MANHATTAN
HUDSON RIVER
EAST RIVER
TIETJEN & LANG DRY DOCK CO. HOBOKEN N. J.
HOBOKEN
23RD ST FERRY
14TH ST
WHITE FUEL OIL ENGINEERING CORP. 742 E. 12TH ST N.Y.
D. L. & W. R.R. STA.
JERSEY CITY
BARCLAY ST
CUSTOM HOUSE
NAVY YARD
TODD SHIPYARDS CORPORATION 75 BROADWAY
ROBINS DRY DOCK AND REPAIR CO. ERIE BASIN
CLINTON DRY DOCKS INC. FOOT OF CLINTON ST. BROOKLYN
TEBO YACHT BASIN CO. FOOT OF 23RD ST. BROOKLYN
BROOKLYN
NEW YORK BAY
STATEN ISLAND
THE NARROWS

In December, 1921, at the Erie Basin plant of the Todd Shipyards Corporation there was successfully accomplished the rather difficult task of docking a vessel whose bottom had practically been entirely torn off or badly crumpled by grounding on a coral reef.

The Todd Shipyards Corporation makes the proud claim that it is the world's largest ship repair organization and that its plants are unexcelled for variety and quality of organization personnel and mechanical equipment. This little job of docking successfully a bottomless tanker is but one of the many proofs substantiating this claim.

The vessel in question is the oil tanker F. D. Asche of 11,790 tons deadweight capacity, built by the Newport News Shipbuilding & Drydock Company in 1918, and owned and operated by the Standard Oil Company of New Jersey. On October 20, 1921, the F. D. Asche had sailed from New York in ballast to pick up oil at Texas City. On the 24th she was caught in a hurricane, driven out of her course under conditions making it impossible to obtain any definite position, and on the morning of the 27th struck on the Manatilla Reef.

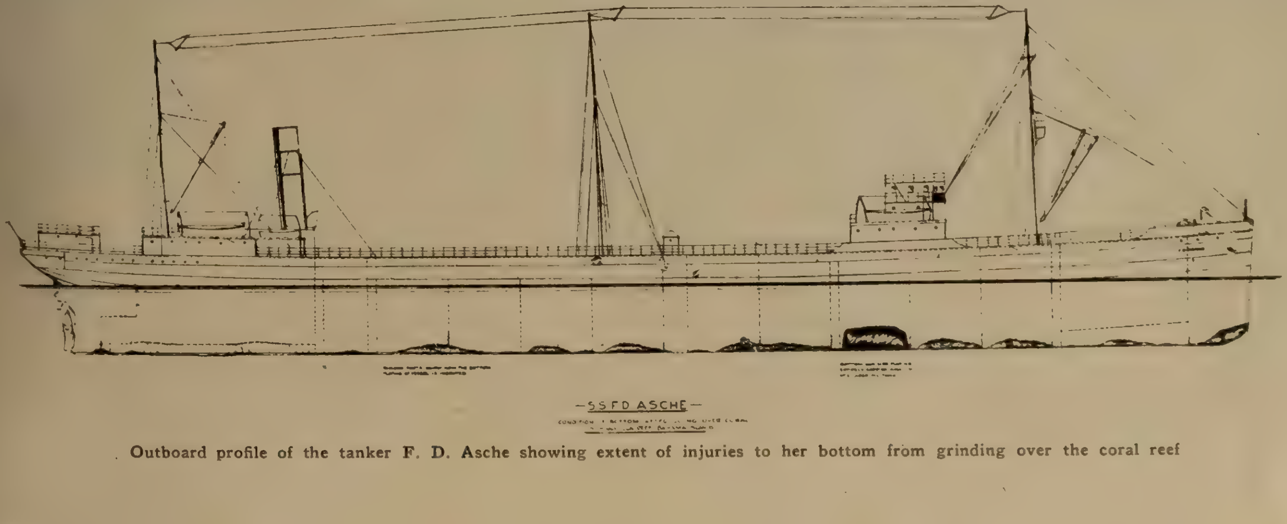
A wireless S. O. S. brought several steamers to her assistance, and the tanker L. J. Drake stood by and on October 29 took off 20 men, leaving a skeleton crew on board. In the meantime the Merritt and Chapman Derrick & Wrecking Company of New York had undertaken the salvaging of the vessel on a "no pay no cure" basis.

It was found on preliminary survey that the vessel had been washed by the heavy seas about a mile over the coral reefs and that about two-thirds of her bottom was practically gone, and severe damage had been sustained by the side plating.

By the use of compressors and air locks the wrecking company's steamer I. J. Merritt succeeded in floating the vessel on the morning of November 11, and she was towed to the Stranger Cay Channel, where temporary repairs were effected and she was then towed to New York by the salvage tugs, arriving November 30.

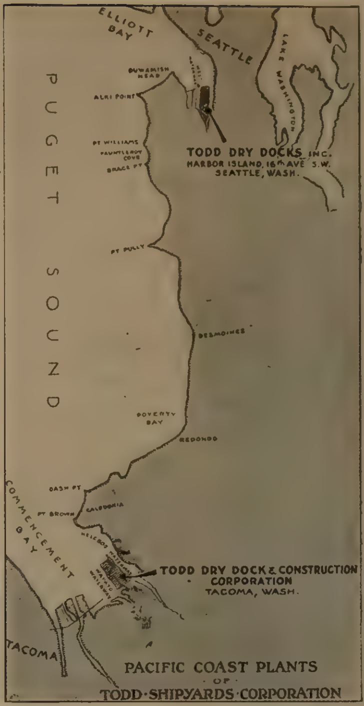
The first thing to be done with a vessel damaged in such fashion is drydocking for proper survey, and for this purpose the F. D. Asche was taken to Erie Basin and to No. 1 graving dock of the Todd Shipyards Corporation. Ordinarily the blocks in a graving dock are set according to the plan of the ship to be docked, but of course this simple method could not be followed in any case where the entire bottom had been knocked out of shape and much of it was missing.

Todd divers were therefore called



Outboard profile of the tanker F. D. Asche showing extent of injuries to her bottom from grinding over the coral reef

The United States Shipping Board steamship Rotarian, a fair example of the work done by the Tacoma plant of the Todd Shipyards Corporation



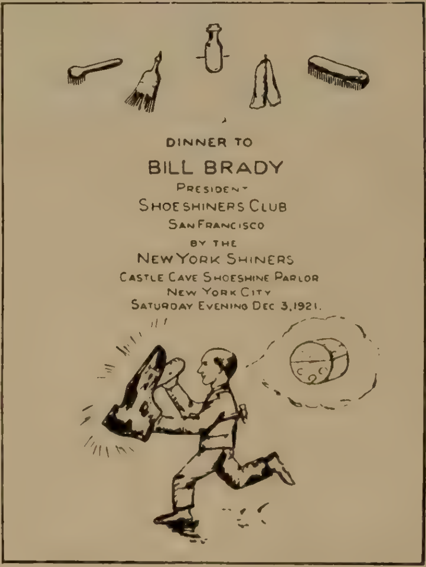
to work, and George J. Robinson, vice-president, and Ernest Fils, naval architect, of the Robins Drydock & Repair Yard of the Todd Shipyards Corporation, checking up their work by the measurements of the divers, laid out new plans showing the bottom of the ship in its actual condition. From these plans blocks were set in the graving block at points safe for the support of the weight of the ship, taking into consideration the damaged state of the hull, and before night of the day in which she arrived at the Basin she was safely docked and ready for survey.

The profile drawing of the ship reproduced herewith indicates the extent of the damage, while the photograph looking out through the jagged hole in the ship's bottom shows very graphically the tremendous grinding to which the hull must have been subjected.

# SHOE SHINERS' DINNER

THAT the sons of the Pacific Coast do not lose any of their charm as hosts after having been transplanted to the effete East was amply evidenced by a royal reception tendered to Mr. William J. Brady, president of the Eureka Boiler Works of San Francisco, California, by his former intimate associates at a testimonial dinner recently given Mr. Brady in New York.

The banquet room of the Castle Cave restaurant in New York rang with glad shouts of welcome when Mr. Brady appeared on the scene. The old Shoe Shiner's Club of San Francisco was reunited. After a real San Francisco dinner, Mr. R. L. Hague, toastmaster, superintended the unveiling of a statue of the club's ideal, that of a boy in bronze shining shoes, and presented the statue to Mr. Brady, who responded appropriately and referred particularly to the foregathering of his old-time friends and his appreciation of their meeting with him.



Dinner to
Bill Brady
President
Shoeshiners Club
San Francisco
by the
New York Shiners
Castle Cave Shoeshine Parlor
New York City
Saturday Evening Dec 3, 1921.

The frontispiece page of the souvenir menu of the Shoe Shiners' dinner

During the evening there was a real entertainment, during which little groups would gather here and there and talk about the days back on the West Coast, and before adjourning it was unanimously agreed that those present should constitute the charter members of the New York chapter of the Shoe Shine Club and that at the following meeting officers should be elected and the new organization made permanent.

The hosts of the evening were: R. L. Hague, Carl Klitgaard, Bruce Gibson, Ed Stewart, James Milne, A. P. Allen, James Botts, E. G. Egbert, Walter Farem, George Jett, W. L. Bunker, W. L. Peebles, G. E. Pendergast, G. W. Selby.

# JAMES SHEWAN ---- SHIP REPAIRS

## Fifty Years on New York Harbor

OVER fifty years ago Mr. James Shewan founded a ship repair business in South Brooklyn that has grown up under the care of its founder and his two sons, James and Edwin A. Shewan, to be one of the largest and best established ship repair plants in the port of New York.

This plant, located at the foot of Twenty-fifth, Twenty-sixth, Twenty-seventh and Twenty-eighth streets, now covers over forty-five acres of land and water and is equipped with a very well planned and properly located group of shops and floating equipment fitted out with all of the special tools necessary for the great variety of work which comes to a ship repair plant.

View along the outfitting wharf and the south side of the new plate shop of the James Shewan & Sons Plant

Close-up of drydock No. 10, James Shewan & Sons plant

The buildings include a new boiler and plate shop 475 feet long by 75 feet wide, which is served by electric cranes and equipped with radial drills and bull riveters; a special oil-burning plate heating furnace 8 feet wide by 35 feet long; and an oil-burning bar heating furnace 6 feet wide by 75 feet long, this shop being capable of building or repairing any size marine boiler or of handling plate repairs for any hull afloat. The machine shop, 296 feet long by 70 feet wide, is served by two overhead electric cranes with a capacity up to 50 tons and is equipped with a large, well assorted group of machine tools of sufficient variety and capacity to take care of the machine work necessary for the propulsion department of any modern steamer. The pipefitting shop is 75 feet by 150 feet; the copper and tinsmith and plumbing shop 250 by 80 feet; the electrical shop 150 by 100 feet; while the blacksmith shop, a department which has always been a specialty with James Shewan & Sons, contains 30 blacksmith fires and 6 large steam hammers, with all the necessary small tools and appliances for efficient work. Added very recently are the new power plant and in connection therewith a new electric and air compressor plant, and the new saw mill, carpenter and pattern-making shop.

Interior view of the new plate shop, James Shewan & Sons

### Floating Equipment

James Shewan & Sons are especially fortunate in their floating equipment, which includes four floating derricks, one of 40-ton capacity and one each of 20, 15 and 10 tons capacity. There are four ocean-going tugs for moving and shifting vessels and for shifting the floating derricks and welding barges to and from vessels in the stream and to any position where salvage work is necessary. Four steam launches are provided for carrying workmen to vessels anchored in the stream. There are four barges fitted with twin electric welding units, and two air compressor barges for supplying power to pneumatic machinery. Very recently a new barge has been fitted up for furnishing steam power and for applying hydrostatic pressure to boilers in testing after repair work has been done on shipboard. This has proven a very great convenience and has added very materially to the efficiency and dispatch of repair work in fire rooms.

### Fire Equipment

The entire plant is served by water piping and an additional high pressure service, the high pressure pumps being located on the pier and automatically operated so that at all times water pressure of about 125 pounds per square inch is available at any part of the plant. The firm purchased from the City of New York fire department the fireboat Seth Low, rebuilt her and put all of her fire-fighting apparatus in first-class condition, so that this additional fire-fighting equipment is available for the protection of the clients of James Shewan & Sons at any hour of the night or day.

### Drydocks

Ten drydocks are operated, ranging in size from 125 feet in length by 41 feet breadth with a capacity of 1000 tons up to an all-steel dock 450 feet in length, 110 feet in breadth, with a depth over keel blocks of 35 feet and a lifting capacity of 12,000 tons. All of the drydock pumps are motor-driven; in fact, all the machinery in the plant is equipped for electric drive. The berthing facilities are adequate for the accommodation of forty ordinary freight steamers and have a mean draft of water alongside of about 35 feet.

General view of the dock basins at James Shewan & Sons' works showing docks 3, 5 and 7. No. 7 in the foreground is a 12,000-ton lifting capacity, one-piece steel girder dock, one of the largest of its kind in the United States.

During the war this plant undertook very successfully some of the largest conversion jobs on vessels for the United States Shipping Board for the army transport service and for the United States Navy, and since the conclusion of the war it has with equal facility reconverted many of these vessels to their normal condition for peace-time service.

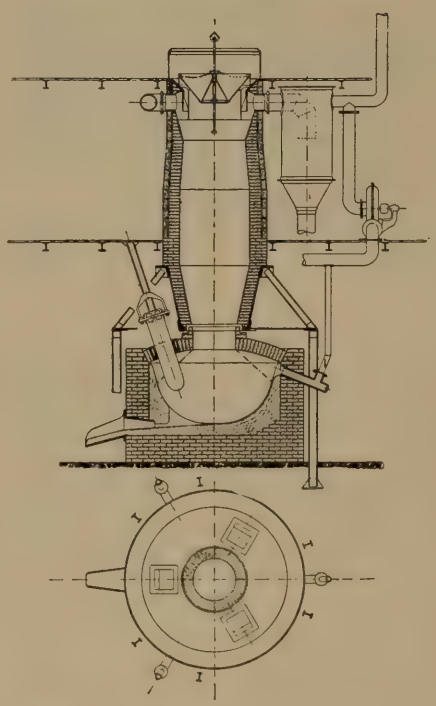
# ELECTRIC IRON SMELTING

## "Elektrometalls" Process

THIS process is based on inventions made by the Swedish engineers Assar Gronwall, Axel Lindblad and Otto Stalhane during the years 1908 to 1910. Practical experiments were carried out during 1909 and 1910 at the Domnarfvet Iron Works belonging to the well-known Stora Kopparbergs Bergslags A.-B. The results proved so satisfactory and the process seemed to offer such advantages to the Swedish iron and steel industry that the Association of Ironmasters, (Jernkontoret), determined to construct a furnace to investigate and develop the process on a practical working scale. This furnace was erected at the Trollhattan Falls and was started in the autumn of 1910.

During the years 1911 and 1912 the furnace was kept working on a great variety of ores and the best working conditions established by impartial and very thorough tests. When these investigations had been completed in the autumn of 1912 the plant was taken over by a company and has been working for purely commercial purposes since October, 1912.

On the strength of the experience gained at Domnarfvet and Trollhattan three similar, though somewhat larger, electric smelting furnaces have been constructed at the Hagfors Iron Works and a new, still larger furnace at Domnarfvet. The design has not been altered in any essential respect during the last two years, though a number of improvements of details have simplified the method of working, increased the efficiency of the process and reduced the working costs.


Sectional elevation and plan of electric iron smelting furnace of the "Elektrometalls" type.

### Construction of the Furnace

The furnace consists of two principal parts, the furnace shaft and the hearth or crucible. The shaft, which is of similar design to an ordinary blast furnace shaft, but of course without any blast tuyers, is supported independently on an iron framework or else on heavy girders resting on the walls of the furnace house. It consists of a shell of steel plates and is lined with firebrick. It is provided with a closed furnace top, the charging bell of which is raised or lowered by means of an electric motor and winding drum. The hearth, which is situated immediately below the shaft, is so constructed that when it is expanded by the heat the central hole in the arch which covers it fits closely around the neck of the shaft.

The hearth also consists of a strong shell of steel plates lined with refractory material and is covered by an arch the weight of which may be supported entirely on the circular lining of the hearth or else partly in this manner and partly by iron straps, riveted to the shell of the shaft.

The electrodes are preferably of circular section and provided with screw joints for joining up end to end. They pass through the arch of the crucible at a slight inclination from the vertical. Water-cooled stuffing boxes with asbestos packing are provided to prevent leakage of gas round the electrodes. The electrodes project into the hearth through the free space which forms between the roof and the charge, which on descending into the hearth falls at an angle from the lower end of the shaft. The electric current is supplied to the electrodes through bronze contacts. Only carbon electrodes have, so far, been used owing to the high costs of graphite electrodes.

The Elektrometall furnaces are generally provided with an arrangement for gas circulation, the gas being drawn by means of a fan from a gas outlet at the upper end of the shaft and forced through a number of nozzles into the free space between the roof of the crucible and the descending charge. The object of this gas circulation is two-fold, viz., to prevent over-heating of the roof of the crucible and to facilitate the reduction process in the shaft. As regards the latter object it is evident that the gas, which becomes highly heated in the crucible, assists in conveying heat to the charge in the shaft, thus extending the reduction zone and rendering it more effective through the increased volume of gas passing through.

In this manner the percentage of $CO_2$ in the furnace gas can be kept higher than if no gas circulation were used and it is evident that this indicates a reduction in the fuel consumption.

The attached tables show the relation of fuel and power consumption to different percentages of $CO_2$ in the furnace gas.

When unburnt limestone is used the coke and power consumption will be somewhat higher than shown in the tables.

It should be noted that the gas circulation does not cause any consumption of gas, as all gas formed by the reduction process must, naturally, be carried away as soon as the furnace has attained its normal working conditions. This gas contains from 10 to 30 volume percent $CO_2$ and from 70 to 50 per cent CO. Owing to the large proportion of CO the gas has a high fuel value and may be utilized for various purposes, as, for instance, heating open-hearth furnaces, roasting ore, etc.

The electric equipment should be so arranged that the two electrodes opposite to each other are coupled in series in each circuit and that each circuit has its separate transformer provided with a regulator. In this way the tension of the various circuits may be regulated by coupling or uncoupling of coils of the transformers. For this reason the furnace is provided with an even number of electrodes. A furnace with four electrodes is supplied with current in two circuits from two transformers and a furnace with six electrodes is supplied with current in three circuits from three transformers. A three-phase alternating current can be employed in either case, as the two transformers can be coupled to a three-phase system and give a uniform load on all phases by means of Scott's connections. This regulation of the tension is of very great importance for the working of the furnace, as the power can in this way be more completely utilized. Variations in the electric resistance between the electrodes are unavoidable owing to variations of temperature, variations in the pressure of the charge on the electrodes, variations in the size of the lumps of ore and limestone, and other unavoidable causes. For these reasons a regulation of the current by means of raising or lowering the electrodes would be quite ineffective.

Table *1*. Consumption of Coke.

Ore assumed to be $Fe_3O_4$.
Coke » » hold 85% C
Pig iron » » 3,4% C

Kg coke per ton iron CO₂ in furnace gas

| | 0% | 5% | 10% | 15% | 20% | 25% | 30% | 35% |
|---|---|---|---|---|---|---|---|---|
| For the reduction | 325 | 308 | 292 | 279 | 266 | 254 | 244 | 234 |
| » combined carbon .. | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| Total Coke Kg. | 365 | 348 | 332 | 319 | 306 | 294 | 284 | 274 |

For the reduction of $Fe_2O_3$ ore the coke consumption is 12.5% higher.

Table *2*. Consumption of Power.

Electric efficiency of Plant 78%

% Fe in charge CO₂ in furnace gas.

| | 0% | | 10% | | 20% | | 30% | |
|---|---|---|---|---|---|---|---|---|
| | KWH per ton iron | Tons iron per H. P. Year | KWH per ton iron | Tons iron per H. P. Year | KWH per ton iron | Tons iron per H. P. Year | KWH per ton iron | Tons iron per H. P. Year |
| 65% | 2,056 | 3.13 | 1,926 | 3.35 | 1,826 | 3.54 | 1,739 | 3.71 |
| 60% | 2,150 | 3.00 | 2,020 | 3.19 | 1,920 | 3.36 | 1,833 | 3.52 |
| 50% | 2,390 | 2.72 | 2,260 | 2.85 | 2,160 | 2.98 | 2,073 | 3.11 |
| 45% | 2,550 | 2.53 | 2,420 | 2.66 | 2,320 | 2.78 | 2,233 | 2.89 |

On the other hand, a constant current can be supplied to the furnace by regulating the tension while leaving the electrodes unaltered, and this at the same time causes a great saving of electrodes. The tension generally varies between 60 and 90 volts and two electrodes may, for instance, be coupled in a circuit of 60 volts, while another pair of electrodes are in a circuit of 90 volts. The dimensions of the electrodes ought preferably to be calculated in the way that the intensity of current will be about 5 amperes per square centimeter of the electrode area.

**Practical Working of the Furnace**

In starting the furnace, the same precautions should be observed as in starting an ordinary blast furnace. The drying of the brick work and heating up of the furnace must be done very slowly. During the first week after starting the furnace, gas is apt to escape through the brick work of the roof of the crucible and this gas should be ignited to prevent the escape of carbonic oxide gas in the furnace house. All cracks in the brick work are, however, stopped in a few days' time by a deposit of carbon from the escaping gas.

The vital part of the furnace is the roof of the crucible, but experience has shown that air-cooling of its upper surface prevents undue abrasion by the heat in the furnace so that it will last for a whole year without any important repairs. In case a few bricks should require replacing, this can be done in less time than twenty-four hours.

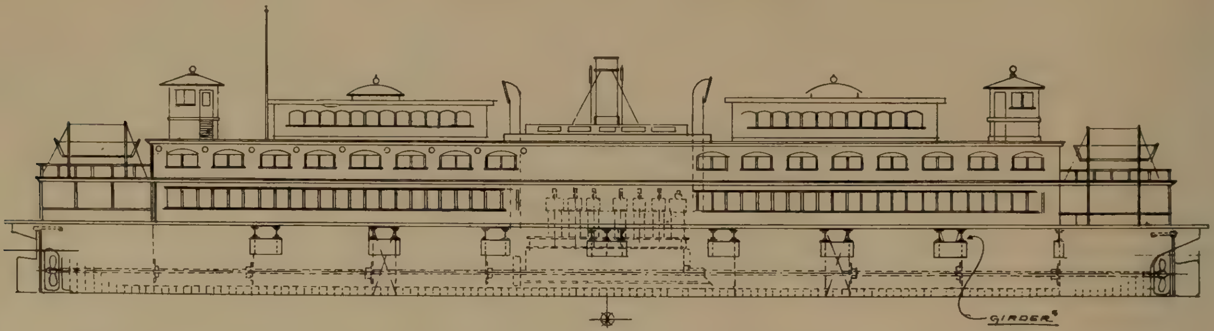
Taken as a whole, the vault can be changed for a new one after a few days' work, and it is not necessary to make the furnace fully empty and cool during this operation.

As previously mentioned, the electrodes should not be touched too often. Owing to the gradual consumption of their lower ends, they must be lowered from time to time, but this should not be done oftener than once or twice in a week. Keeping the electrodes stationary as much as possible, also facilitates the melting of the ore close to their surface without sticking.

When charging the furnace it is important to calculate carefully the quantity of fuel required. As no carbon is burnt with air in the furnace, no more fuel should be used than what is necessary for the reduction of the ore and for carburizing the iron. Consequently the required quantity of fuel should be calculated according to the percentage of oxygen in the ore, the quantity of lime and the moisture in the fuel, and should be increased or reduced according as gray or white pig iron is desired.

For the electric reduction furnace either charcoal or coke may be used as fuel. It should, however, be observed that a furnace for coke should be constructed with a considerably smaller shaft than a furnace for charcoal, as the weight per volume unit is 75 per cent higher with coke than with charcoal. In order to prevent choking up of the shaft when coke is used, it should be constructed with a wide neck. Such a furnace should therefore have a low and wide shaft.

Furnaces intended to work with a high percentage of earthy ores or concentrates should also be constructed with a low and wide shaft.



# SHIPBUILDERS' VIEWS ON MARITIME LEGISLATION

**Report to the Shipping Board from the Council of American Shipbuilders**
**Council asserts its continued attachment to the legislation contained in the Merchant Marine Act of 1920.**

The salient features of the Merchant Marine Act, including Section 28, providing for preferential railway rates, and Section 34, providing for a modification of treaties impairing the freedom of American maritime legislation, were strongly urged upon Senator Jones and the Senate Commerce Committee by the Committee of American Shipbuilders, which was afterwards incorporated into the present council. The council would merit the contempt of Congress if it deserted the fundamental principles which it urged with effective insistence and in the faith of which it still continues.

**The council is opposed to the repeal of Section 28, Section 34, or of any other section of the Merchant Marine Act which has not hitherto been put into effective operation.**

The fact that reasons of state may have hitherto prevented the enforcement of these sections, and that such reasons still exist, is no just ground for the repeal of either. They should remain upon the statute books to be instantly available when the state reasons of today give place to the state reasons of tomorrow. It may transpire that other proposed measures in aid of the merchant marine will fail of enactment, or if enacted, may prove ineffective, and if effective, may be of short life. In either of these events the existing sections would prove invaluable.

The council believes that the declaration of the Merchant Marine Act, that the purpose of its enactment was to secure to American vessels the carriage of the greater portion of our own commerce, expressed an aspiration so just as to disarm criticism. It believes that the first step towards the accomplishment of this result is to economically exclude from our trade with all nations all ships except our own and those of the other party to the trade. Commerce between nations includes carriage. Nations stranger to the commerce should not be permitted to intrude their ships therein.

The Merchant Marine Act (which the council urged) is a Congressional recognition that the American ship cannot take or maintain its place upon the sea, except by effective discriminations in its favor.

If reasons exist which at present prevent the discrimination from taking the form of preferential duties, then the less preferable form of discrimination, namely subsidy, must be enacted in the meantime, unless the Congress is prepared to sacrifice the substance to the form.

This council does not favor subsidy **as an alternative policy to that of the Merchant Marine Act, or as in anywise a substitute therefor, but as a measure of relief until events permit discriminations better suited to the genius of the American people.**

This council recognizes that hitherto measures beneficial to the merchant marine have for many years been defeated by dividing the friends of the merchant marine into hostile camps, each so opposed to the relief proposed by the other, that a cause dear to both has been lost. Those who have favored subsidy have opposed discriminating duties, and those who have favored discriminating duties, have opposed subsidy, with the natural consequence. Repetition of such a conflict may be expected to produce a repetition of result.

This council believes that any subsidy measure passed at this time should (a) either avoid appropriation, or if this is necessary, promise continuance; (b) it should be confined to present American vessels of approved class, or to vessels hereafter American built; (c) should not be of a character to encourage bad ships to remain in the trade; (d) it should provide that vessels hereafter sold by the Shipping Board should carry subsidy or not, as might be provided in the sale.

In the event that foreign objections are not controlling, it would be desirable that the measure should devote a certain fund to the subsidy, which would not require continual reference in the appropriation bill, thus eliminating the measure from the arena of politics.

A term of continuance should be directly or indirectly provided for, otherwise the measure may ameliorate the conditions of those now in the business, but discourage others from entering it.

# FULL SPEED AHEAD

EDITED BY ANDREW FARRELL

## Steamship Operations

**Full Speed Ahead: Steamship Operations, 129; With the Shipbuilders, 136; Marine Insurance, 143; Rates and Freights, 146; About People, 151.**

### The Shipping Pool

So much has been published in daily newspapers of all parts of the United States regarding plans for the formation of a large Pacific Coast shipping corporation to take over and operate Shipping Board tonnage to the Orient that little new remains to be said. The progress of events to date may, however, be recapitulated briefly, and afterward some of the salient features of the plan, a few of which have escaped general notice, may be covered in more detail.

Herbert Fleishhacker, a San Francisco banker, was called to Washington a few months ago by Chairman Lasker of the Shipping Board to discuss the formation of a shipping combine. Upon his return to San Francisco, Mr. Fleishhacker obtained the indorsement of the San Francisco Chamber of Commerce, which called a conference of chambers of the principal ports of the Pacific Coast. This conference, held January 20, voted indorsement of the general plan, all cities supporting the principle except Portland, which did not vote. Mr. Fleishhacker was appointed chairman of a committee, the members of which he will select, to ascertain from the Shipping Board and other government agencies on what terms the vessels would be sold and what assistance would be extended. Upon the report of this committee being received, another body will work out plans for the organization of a corporation.

### Still in Embryo

From what has been said it will be seen that plans remain in an embryonic state. So long as uncertainty exists as to several important features, among which may be mentioned the price that the Shipping Board would demand for its combination tonnage and the governmental aid that might be expected, the scheme, however much the principle might appeal, must be regarded as uncertain. Should the board, however, be willing to dispose of the 535's at reasonable prices, which in the nature of things must be far less than their cost, perhaps no more than one-fourth or one-fifth, and should the government be in a position to make a binding promise of aid, then the remaining details probably would be unimportant. The first of these conditions should give far less trouble than the second. That the President and Chairman Lasker have suggested turning over army and navy transport work to the proposed corporation and also giving it mail contracts does not necessarily mean that Congress would be willing to acquiesce in the desires of the executive departments; in fact, definite action by Congress probably would be an indispensable preliminary to organization of a syndicate such as is proposed.

It is evident that the sale of the Shipping Board's combination vessels would be a step of considerable importance in taking the government out of shipping; but the greater step, that of disposing of cargo and tanker tonnage, would remain. Not all the government's combination vessels, on the other hand, could be absorbed by a purely Pacific organization; an Atlantic syndicate appears to be a logical concomitant, and accordingly the newspapers publish reports that moves looking to the organization of another corporation will be started soon. There appears, indeed, no reason why the Shipping Board, having sponsored the plan as applied to the Pacific, should stop there, even though there may be more urgent reasons for the early organization of a Western corporation. Among those reasons may be mentioned the strength of foreign lines, the complete dependence of the larger American companies on Shipping Board tonnage, and the necessity faced by the board of having to allot ten vessels or so to ports that clamor for twice that number.

### Would Absorb Companies

One consideration that occurred to the shipping world, although it received little attention in the newspapers, was that the purchase of the Shipping Board's 535's by the proposed corporation would practically destroy the business of the Pacific Mail and Pacific Steamship companies, neither of which operates any of its own tonnage to the Far East. This point was considered at the San Francisco conference, and the statement was made that, so far as the necessarily indefinite plan went at that time, the corporation would have to consider the taking over of the organizations and good-will of these companies. Other companies operating their own tonnage might be acquired by the corporation if they desired to lose their identity. It is doubtful, however, whether the corporation, if organized, would find it expedient to go farther than to acquire the Oriental departments of the two large corporations, or whether other companies would wish to merge.

### Portland Is Dubious

Although the announced intention of the government and the various chambers of commerce is to organize a corporation representative of the Pacific Coast as a whole, the Portland delegation was pessimistic regarding the success of the plan. As is well known, Portland has desired a fast passenger service to and from the Far East, and has looked to the Shipping Board for the allotment of vessels with which to maintain such a service; now Portland evidently fears that the demands of the remainder of the Pacific Coast might outweigh those of the Columbia River, and as a consequence it did not vote on the general indorsement of the plan. That there are great difficulties in the way of allocations of corporation tonnage are quite apparent, for the corporation, being designed to earn dividends, must naturally operate its vessels where business offers, despite claims that might be set up by minor ports. In other words, the dilemma of the Shipping Board would be passed on to the syndicate. The problem thus presented is not, of course, insoluble, but it is exceedingly difficult.

So far as the Shipping Board allocations are concerned, the proposed corporation would have practically a monopoly of trans-Pacific business. Said Mr. Fleishhacker in his opening address to the conference: "It is suggested . . . that the government entirely discontinue the operation of ships on the Pacific; that its ships be sold at such price and upon such terms as will insure success to the proposed corporation; that no further allocations or sales be made of any new government-owned combination passenger and freight ships in competition with the new corporation to be formed to handle trans-Pacific business, and that no further sales beyond the boats that may be purchased at this time will be made without giving this corporation preference in obtaining them. Also, that no sales of government ships on the Pacific or Atlantic shall be made at any time for a less figure than that named this corporation."

## How About Manila?

One great advantage to the proposed corporation or to any American operator in competing with foreign steamships in the Pacific would be the closing of the Philippine-United States trade to foreign shipping. A few months ago it appeared almost certain that President Harding would proclaim the existence of adequate shipping under the American flag and would place the archipelago within the coastwise laws February 1, as he is empowered to do by the Merchant Marine Act; now, however, it is practically assured that any such action has been postponed indefinitely and that foreign shipping will continue to ply between Manila and United States ports.

### General Wood Opposes

The primary reason why the President probably will not place the Philippines under the coastwise laws at this time is the opposition of General Wood. The general's opposition alone would be potent enough, but there are other serious factors, among which is the apparent intention of the Shipping Board to withdraw from service the three combination vessels of the 502 class that the Pacific Mail has been operating to Manila and the East Indies via Honolulu. With these vessels the Pacific Mail has given the Philippines the only worthwhile direct service they have ever had with the Pacific Coast, for all liners of so-called "Oriental" routes make Manila after they have called at ports of China and Japan, and call at those ports again after departing from the Philippines, so that mails, passengers and freight are subject to serious delay both eastbound and westbound. The Pacific Mail's 502's, on the other hand, have engaged in a direct service via Honolulu. After calling at Manila they have proceeded to the Straits and India, and have returned by the same route.

### The One "Adequate" Service

This route appears to be the single one that can give Manila what may be described as an "adequate" service, inasmuch as the greater importance of Japan and China and their relative proximity to the Pacific Coast make it certain that for an indefinite number of years Manila will be the tail to the Hongkong and Yokohama dog so far as "Oriental" liners are concerned. If an East Indian service could have been maintained and extended, however, Manila would have been served in a manner justifying the extension of the coastwise laws to the islands; but now the suspension of further bookings by the Pacific Mail indicates that the Shipping Board, having discovered that the service does not pay, intends to withdraw the vessels and leave the Philippines in their old situation. If the Shipping Board does take such action, no one could argue seriously that the coastwise laws should become effective.

## Wage Reductions

Following the lead of the American Steamship Owners' Association, which announced wage reductions in January, the Pacific American Steamship Association approved a new scale to become effective February 1. In general, reductions average 12 per cent; but the new scale remains higher by $5 to $10 a month than the Atlantic. Although both scales, of the Atlantic and Pacific, as adopted last May, were identical, Pacific operators believed that the reductions of the new Atlantic scale were too great. No intimation was given as to the probable duration of the revised scale.

Intercoastal operators, whose vessels are in both oceans, will follow their own inclinations as to which scale shall be adopted. Generally speaking, they probably will follow the lower Atlantic, although some may adhere to the Pacific.

The following table shows the former Atlantic-Pacific scale, effective since May, and the revised Atlantic and the revised Pacific for all grades except master and chief engineer:

**Classification**

(Figures are inclusive)

| Classes | Single-screw | Twin-screw |
|---|---|---|
| A | Over 20,001 | Over 15,001 |
| B | 7,501 to 20,000 | 5,501 to 15,000 |
| C | 3,501 to 7,500 | 2,501 to 5,500 |
| D | Below 3,501 | Below 2,501 |

Vessels are to be classed according to their "power-tonnage" represented by gross tonnage plus indicated horsepower as given in the ship's documents.

**Deck Officers**

| Class A | Old Atlantic-Pacific | Revised Atlantic | Revised Pacific |
|---|---|---|---|
| First | $205.00 | $175.00 | $180.00 |
| Second | 180.00 | 150.00 | 155.00 |
| Third | 160.00 | 135.00 | 140.00 |
| Fourth | 140.00 | 120.00 | 125.00 |
| Class B | | | |
| First | 200/195 | 165.00 | 175.00 |
| Second | 175/170 | 140.00 | 150.00 |
| Third | 155/150 | 125.00 | 135.00 |
| Fourth | 135/...... | .......... | 120.00 |
| Class C | | | |
| First | 190/185 | 155.00 | 165.00 |
| Second | 165/160 | 130.00 | 140.00 |
| Third | 145/140 | 115.00 | 125.00 |
| Class D | | | |
| First | 155.00 | 130.00 | 140.00 |
| Second | 135.00 | 115.00 | 120.00 |
| Third | 110.00 | 95.00 | 105.00 |

**Engineers**

| | | | |
|---|---|---|---|
| Class A | | | |
| First ass't | $205.00 | $175.00 | $180.00 |
| Second ass't | 180.00 | 150.00 | 155.00 |
| Third ass't | 160.00 | 135.00 | 140.00 |
| Fourth ass't | 140.00 | 120.00 | 125.00 |
| Junior | 115.00 | 100.00 | 100.00 |
| Class B | | | |
| First ass't | 200/195 | 165.00 | 175.00 |
| Second ass't | 175/170 | 140.00 | 150.00 |
| Third ass't | 155/150 | 125.00 | 135.00 |
| Fourth ass't | 135/...... | .......... | 120.00 |
| Class C | | | |
| First ass't | 190/185 | 155.00 | 165.00 |
| Second ass't | 165/160 | 130.00 | 140.00 |
| Third ass't | 145/140 | 115.00 | 125.00 |
| Class D | | | |
| First ass't | 155.00 | 130.00 | 140.00 |
| Second ass't | 135.00 | 115.00 | 120.00 |
| Third ass't | 110.00 | 95.00 | 105.00 |

**Wireless Operators**

| | | | |
|---|---|---|---|
| Chief | $105.00 | $ 90.00 | Optional |
| Assistant | 85.00 | 70.00 | |

**Deck Department**

| | | | |
|---|---|---|---|
| Able seamen | $72.50 | $47.50 | $55.00 |
| Ord'y seamen | 52.50 | 35.00 | 42.50 |
| Carpenter | 85.00 | 70.00 | 70.00 |
| Carp's mate | 80.00 | 55.00 | 60.00 |
| Boatswain | 80.00 | 60.00 | 70.00 |
| Boatswain's mate | 77.50 | 55.00 | 60.00 |
| Quartermstrs. | 75.00 | 52.50 | 60.00 |
| Storekeeper | 75.00 | 52.50 | 60.00 |

**Engine Department**

| | | | |
|---|---|---|---|
| Deck engineer | $85.00 | $70.00 | $75.00 |
| Storekeeper | 80.00 | 55.00 | 60.00 |
| Oiler | 80.00 | 55.00 | 60.00 |
| Watertender | 80.00 | 55.00 | 60.00 |
| Firemen | 75.00 | 50.00 | 55.00 |
| Wiper | 65.00 | 40.00 | 45.00 |
| Coalpasser | 65.00 | 40.00 | 45.00 |
| Donkeyman | 80.00 | 55.00 | 62.50 |
| Pumpman | 85.00 | 70.00 | 80.00 |

### Steward's Department
(Freight Steamers)

| | | | |
|---|---|---|---|
| Chief stew'd | $125.00 | $105.00 | $110.00 |
| Chief cook | 105.00 | 90.00 | 95.00 |
| Second cook and baker | 90.00 | 70.00 | 75.00 |
| Messmen | 60.00 | 40.00 | 40.00 |
| Messboys | 55.00 | 30.00 | 30.00 |

### Back to Pre-1919 Status

Both new schedules may be described briefly as reversions to the status of years preceding 1919. Able seamen hold a material gain over the average of 1915, as do first mates, and presumably other deck officers as well; firemen hold less of their increases of the last seven years, although they remain slightly in advance of their 1915 standing. Accompanying table shows average monthly wages paid to able seamen, first mates and firemen of American vessels of more than 1500 gross tons, as reported by the commissioner of navigation. The trade-routes selected probably are fairly representative, although it is difficult to ascertain whether the numbers of men shipped were sufficiently large to make the figures altogether typical. Another confusing element is the system employed of grouping vessels into classes of less than 500 tons, from 500 to 1500 and more than 1500. Perhaps the classes were good enough in the earlier days of steam, but they are antiquated now, for practically all ocean-going steamers exceed 1500 tons gross. Accuracy would demand more classifications above 1500 tons. Nevertheless, the compilations of the bureau of navigation do afford a good enough index if these limitations be kept in mind.

## Shipping Board Cuts

The Shipping Board announced on January 25 that "as a result of several conferences during the past week between the United States Shipping Board Emergency Fleet Corporation and representatives of respective marine labor organizations a new wage scale will be made effective on all Shipping Board vessels February 6 and continue until June 30, 1922." This is the only scale in the preparation of which the unions were recognized, and it is the only one that is to run for a specified time. Reductions range from 15 per cent for officers to 15 and 25 per cent for unlicensed men. The Shipping Board scale differs in so many particulars from the Atlantic on the one hand and the Pacific on the other that it hardly can be compared except by setting it against the others, item by item.

The new scale follows:

### Masters and Mates—Wages (Per Month)

| Classes | A | B | C | D | E |
|---|---|---|---|---|---|
| Master | $315 | $285 | $270 | $265 | $250 |
| First mate | 175 | 170 | 165 | 160 | 155 |
| Second mate | 155 | 150 | 145 | 140 | 135 |
| Third mate | 135 | 130 | 125 | 125 | 120 |
| Fourth mate | 120 | 115 | ...... | ...... | ...... |

### Engineers—Wages (Per Month)

| Classes | A | B | C | D | E |
|---|---|---|---|---|---|
| Chief engineer | $280 | $250 | $240 | $230 | $220 |
| First assistant engineer | 175 | 170 | 165 | 160 | 155 |
| Second assistant engineer | 155 | 150 | 145 | 140 | 135 |
| Third assistant engineer | 135 | 130 | 130 | 125 | 120 |
| Fourth assistant engineer | 120 | 115 | ...... | ...... | ...... |
| Junior engineer | 100 | ...... | ...... | ...... | ...... |

### Radio Operators — Wages (Per Month) for First-Class Licenses

| Classes | A | | B | | C | |
|---|---|---|---|---|---|---|
| | License | Wage | License | Wage | License | Wage |
| Chief operator | 1st | $105 | 2nd | $90 | 2nd | $85 |
| First assistant | 2nd | 95 | 3rd | 70 | None | |
| Second assistant | 3rd | 75 | None | | None | |

Note: Men holding lower license than above specified are to be employed only in emergencies where men of the specified grades are not available. While holding such emergency appointments, men are to receive the wage provided for that grade license under the respective vessel class.

### Sailors—Wages (Per Month)

| | |
|---|---|
| Carpenter | $70.00 |
| Carpenter's mate | 60.00 |
| Boatswain | 65.00 |
| Boatswain's mate | 60.00 |
| Quartermaster | 60.00 |
| Able seaman | 55.00 |
| Ordinary seaman | 40.00 |
| Storekeeper | 60.00 |

### Firemen, Oilers and Watertenders Wages (Per Month)

| | |
|---|---|
| Deck engineer | $70.00 |
| Pumpman | 70.00 |
| Donkeyman | 65.00 |
| Storekeeper | 65.00 |
| Oiler | 65.00 |
| Fireman | 57.50 |
| Coal passer and wiper | 50.00 |
| Watertender | 66.00 |

### Cooks and Stewards—Wages (Per Month)

| | Freight Vessels | |
|---|---|---|
| | Foreign Trade | Coastwise |
| Chief steward | $105 | $95 |
| Steward and cook | 105 | 95 |
| Chief cook | 90 | 80 |
| Second cook, baker | 70 | 65 |
| Second cook | 65 | 60 |
| Butcher | 70 | 65 |
| Messman | 45 | 45 |
| Utilityman | 45 | 45 |
| Deck messboy | 35 | 35 |
| Engine messboy | 35 | 35 |
| Steward's messboy | 35 | 35 |

In the negotiations the board was represented by Commissioner O'Connor, A. J. Frey and J. C. Jenkins, director of industrial relations; and the marine organizations by committees headed by Captain John H. Pruett of the Masters, Mates and Pilots' Association; Captain John F. Milliken of the Neptune Association; William S. Brown, president of the Marine Engineers' Beneficial Association, and Claud C. Levin, president of the National United Radio Telegraphers' Association.

### Average Wages Paid on American Steamers of More Than 1500 Gross Tons

| | 1895 | 1900 | 1910 | 1915 | 1919 | 1920 | 1921 |
|---|---|---|---|---|---|---|---|
| Able Seamen: | | | | | | | |
| New York-So. America | $25.00 | $25.00 | $25.00 | $27.50 | $75.00 | $85.00 | $85.00 |
| S. F.-Asia-Australia | 28.75 | 32.03 | ......... | 38.43 | 75.00 | 88.33 | 87.61 |
| First Mates: | | | | | | | |
| New York-So. America | 78.33 | 80.00 | 100.00 | 100.00 | 187.50 | 228.75 | 228.75 |
| S. F.-Asia-Australia | 105.88 | 103.02 | 125.00 | 126.64 | 171.23 | 222.12 | 226.65 |
| Firemen: | | | | | | | |
| New York-So. America | 40.00 | 40.00 | 40.00 | 40.00 | 75.00 | 90.00 | 90.00 |
| S. F.-Asia-Australia | 45.00 | 48.24 | ......... | 53.33 | 75.00 | 88.33 | 88.07 |

## MO4 vs. Bareboat

When the Shipping Board was discussing the supplanting of the MO4 agreement with a bareboat charter plan, most operators were of the belief that any considerable chartering of vessels, especially at any rate that even approximated 50 cents a deadweight ton, would be quite unlikely, and that only the continuance of the MO4 system could lead to any extensive employment of government tonnage. That these beliefs were well founded has been proved by the events of the last few months. About the first of the year there were only twenty-three board vessels under bareboat charter, while during the period August-December the number of vessels operated under MO4 had decreased from 674 to 321 and the number of agents from 75 to 43, and during the same time 125 tramp vessels managed by twelve operators had been retired, leaving no tramps whatever in service. These figures prove that the bareboat form in existing circumstances is incapable of supplanting MO4. Chairman Lasker admits the fact in his statement:

"As the cost of operating American ships is greater than that of any other, and as other countries had the established trade routes which we must lose money to gain, it can readily be seen that in this depressed market it was impossible to sell ships and in a market where you cannot sell ships it is next to impossible to charter same, because the charter hire is based on the sales value of the ships, and in this over-tonnaged and depressed market if there is no sales value there is practically no charter basis. We have chartered a few ships for special runs. But although we have done our utmost to charter ships we did not do so because in the vast ocean-carrying competition existing today we could find practically no one who felt they could make money chartering ships no matter how low the rate, or in many instances if they were given ships for nothing.

### Retrenchments Are Made

"Of course, all this will be cured by time. World conditions will improve. The surplus tonnage will disappear, but in the meantime the board, although it is not in sympathy basically with the MO4 contract any more today than it was last July, is forced to continue under this basis. However, our monthly operating loss on actual voyage accounts is less than $1,000,000, in return for which expenditure we are maintaining permanent lines under the Shipping Board to practically every port in the world, as directed by the Merchant Marine Act. This has been accomplished by increased efficiency of operation, which has removed from the MO4 contract many opportunities for waste and chicane.

"For instance, we have consolidated routes where we have more than one operator going to the same port, and at the same time have kept up ample sailings. We have limited the per diem for subsistence of crews. We are taking under our own control the basis of stevedoring, and through competent and efficient supervision from Washington have improved the operating ability of our agents.

### Out of Operation by 1924

"With improved world conditions and government aid to shipping, we hope that the board will within two years beginning July 1 next be able to get out of ship-operation. In the meantime we maintain that although we are forced to continue on the MO4 basis we are doing so with a minimum of loss and an increased efficiency to which the result of the past cannot be compared, and I submit as proof thereof our financial statements, and the better feeling and greater confidence that exists toward Shipping Board operations.

"We make no apology for being on the MO4 basis until the changed conditions referred to take place. It is beyond our power to get out of it, if we are to maintain as we must maintain in the essential trade routes covered by the Jones Act and with which we are heartily in sympathy. But in the meantime we are increasing efficiency every day."

Chairman Lasker's admission is frank and manly, but it does not efface recollection of the unfortunate, reckless statement that the board would do away with MO4 altogether, which, as the chairman discovered, could not be done without withdrawing practically all tonnage from service. Nor has he fulfilled his pledge to sink or sell all wooden vessels by October 1, 1921.

At a hearing of the appropriations committee of the House about the middle of January, Chairman Lasker gave more information regarding the board's business. Representative William R. Wood, chairman of the subcommittee, spoke as follows:

"We notice the Shipping Board did a gross business of a little less than three hundred million dollars in the year ended June 30, 1921. I find page 321 of the fifth annual report, which shows the Shipping Board did a gross business of $354,000,000, from which must be deducted $58,000,000 for old transactions with the War Department and which had no bearing on 1921, so that the net business of the Shipping Board for the year ended June 30 last was $295,000,000. I note you are now doing a business at an annual rate of $115,000,000. Will you please illumine us?"

Mr. Lasker replied: "On December 31, 1920, we were operating 785 berth steamers and 51 tramp steamers; on June 30, 1921, we were operating 467 berth steamers and 82 tramp steamers; today we are operating 390 berth steamers and no tramp steamers. It will thus be seen that we would naturally be doing a much smaller business because of the fewer steamers we are operating. . . .

"But beyond this reason of policy which brought about a decreased business is the fact that freights have vastly decreased. The same number of ships as were operating in the year ended June 30, 1921, would not have done over half the gross business in dollars and cents if the going rates then were as low as they are today.

### How Rates Have Fallen

"Thus it will be seen that, ship by ship, we are carrying much more tonnage today than in the prior years. For instance, on December 31, 1920, steel to South America was $14 a ton. The price was the same on June 30, 1921. It is only $10 a ton today. Flour to the Levant was $16 on December 31, 1920; it dropped to $7.28 by June 30, 1921, and is $4.48 today. Glucose to the same ports was $20 on December 31, 1920, $16 on June 30, 1921, and is $6.50 today. Oil to the United Kingdom was $1 per hundred pounds on December 31, 1920; it was 65 cents on June 30, 1921; and it is 30 cents today. Phosphates to the same ports was $8.75 per ton on December 31, 1920; it was $5.40 on June 30, 1921; and is $3.80 today. Steel to the Far East was $20 per ton on December 31, 1920; $16 on June 30, 1921; and is $8 today."

## Whose Fault?

A statement credited to the International Seamen's Union that American seamen soon would become as extinct as the dodo bird, inasmuch as the percentage of United States citizens on Shipping Board and privately-owned vessels decreased from fifty in May to eighteen in January, makes exceedingly interesting reading. More interesting, however, would have been a detailed explanation by the union as to the causes of this decrease, other than the brief statement, as reported in the newspapers, that the Shipping Board was not encouraging Americans to go to sea. If the union can muster no

| Nationality. | 1914 | 1915 | 1916 | 1917 | 1918 | 1919 | 1920 | 1921 |
|---|---|---|---|---|---|---|---|---|
| Americans (born) | 63,247 | 65,196 | 76,956 | 81,899 | 72,613 | 97,160 | 137,016 | 125,067 |
| Americans (naturalized) | 31,417 | 29,965 | 31,877 | 26,826 | 24,868 | 24,676 | 31,777 | 32,356 |
| British | 24,745 | 29,395 | 29,523 | 28,947 | 26,967 | 26,848 | 36,609 | 38,061 |
| Chinese | 64 | 471 | 68 | 42 | 205 | 729 | 1,625 | 3,496 |
| Japanese | 98 | 200 | 245 | 368 | 972 | 1,198 | 1,276 | 1,129 |
| Filipinos | 472 | 482 | 528 | 650 | 1,091 | 1,154 | 1,646 | 2,825 |
| Germans | 9,497 | 9,466 | 12,415 | 10,254 | 206 | 138 | 1,568 | 1,626 |
| Norwegians | 8,194 | 9,891 | 11,383 | 9,819 | 9,617 | 10,237 | 11,585 | 10,138 |
| Swedes | 6,321 | 7,878 | 9,208 | 9,505 | 10,095 | 10,054 | 11,905 | 9,574 |
| Danes | 2,260 | 4,084 | 4,608 | 4,893 | 5,467 | 5,843 | 6,827 | 5,456 |
| Russians | 4,526 | 5,930 | 7,949 | 8,150 | 9,127 | 10,108 | 9,442 | 8,811 |
| Austrians | 3,363 | 3,536 | 3,474 | 1,894 | 427 | 125 | 664 | 684 |
| French | 617 | 716 | 892 | 783 | 663 | 694 | 948 | 1,040 |
| Spanish | 25,022 | 25,252 | 33,139 | 34,006 | 31,643 | 24,153 | 29,784 | 31,350 |
| Italians | 4,368 | 4,843 | 4,150 | 4,079 | 3,491 | 2,503 | 3,463 | 4,871 |
| Portuguese | 3,921 | 5,034 | 4,733 | 5,702 | 4,869 | 5,481 | 6,031 | 5,784 |
| Others | 11,442 | 16,196 | 21,533 | 25,322 | 30,019 | 34,811 | 41,974 | 43,564 |
| Unknown | 10 | 6 | ........ | 2 | ........ | ........ | ........ | ........ |
| Total | 199,584 | 218,541 | 252,681 | 253,141 | 232,340 | 255,922 | 334,140 | 325,832 |
| Per cent Americans | 47.4 | 43.5 | 43.2 | 42.9 | 41.9 | 47.6 | 50.5 | 48.3 |

Nationalities of officers and men shipped before United States Shipping Commissioners during the last eight fiscal years

other explanation it must be convicted of stupidity or intellectual dishonesty.

### What Has the Union Done?

What has the union done to encourage Americans to go to sea? What has it ever done except to discourage them? The effect of the Seamen's Law alone has been most adverse. If ever a ridiculous provision was incorporated in the statute-books of any nation it is that requiring 65 per cent of the deck crew of American seagoing vessels to have three years' experience at sea. Young men from the inland states, who never saw salt-water in their lives, attend the United States Naval Academy for four years and are graduated as potential admirals; other boys, who prefer the merchant service, can win licenses as mates after only two years of experience; only the able seaman requires three years. "If three years were actually required to qualify a man to perform the duties exacted from the deck department of a modern cargo steamer, the law could be understood and accepted with its drawbacks, but no such period is in fact required," said the last report of the commissioner of navigation. (The commissioner might have gone into details regarding "the duties exacted from the deck department of a modern cargo steamer"; he might have dwelt upon the patent fact that, however distasteful the truth may be to the deck and bridge, the center of gravity of present-day shipping has shifted to the engine-room. For one time that deck officers or men are called upon to exercise rare qualities of judgment the greasy men below are called upon to exercise those qualities ten times. When the engineers fail the hour has come for all hands to take to the boats.)

### Premium on Aliens

"The requirement of law places a premium on the employment of the alien on the American ship, for the number of aliens qualified by three years' service exceeds the number of qualified American men in our own ports. A liberal estimate of the deck crews of our 5,000,000 gross tons in 1918 would be 40,000 men, Americans and aliens. Our seagoing tonnage now requires something over 100,000 men in the deck department, of whom 65,000 must be men of three years' service on the deck, and had everyone of the 40,000 in 1918 been Americans—and such was far from the fact, for in that year only 42 per cent in all departments were Americans—it would still be necessary to ship thousands of aliens as able seamen to comply with the law, and in pay and rating they would outrank Americans of shorter service," said the commissioner.

### Mr. Furuseth's Italian Hand

This decline, which now strangely agitates the union, began last year, when the percentage of American citizens, both native-born and naturalized, decreased more than 2 per cent from that of 1920. But this, the commissioner of navigation points out, was not unexpected, as the fiscal year 1920 was the time of great expenditure by the Shipping Board and several million dollars were spent in an effort to obtain Americans for board vessels. This fact stands as a singularly effective refutation of the statement of the union that the Shipping Board was not encouraging Americans to go to sea; but a great deal more remains to be said regarding the activities of the board. It maintained a recruiting and training service, as the union must know quite well. Does the rank and file of the union know that Andrew Furuseth consistently attempted to impair and destroy the training of young men by the Shipping Board; that he fought the training-ship system and came within an ace of destroying it? He desired to supplant it with a less effective apprentice system, because the latter would result in youngsters being placed under practical control of the union from the time they first went aboard ship, and if he succeeded in this effort, Mr. Furuseth evidently did not care whether as many boys were recruited or whether their training was as thorough.

In other respects the Seamen's Law has encouraged the alienization of American shipping. The commissioner of navigation may be quoted at length: "During our participation in the war many Americans answered the inducements of many kinds held out to them to go to sea, and under depressed conditions of industry ashore probably many still remain in the sea service, but these have not sufficed to maintain the American percentage on board the increasing fleet built by the Shipping Board. With the return of peace the Seamen's Act of 1915, which was, in fact, suspended through the workings of greater forces evoked by the war, has resumed its operations. Whatever may be said of its purpose, the tendency of that act is to increase the number of aliens on American ships. The desertion from foreign ships in American ports was made easy, and as the deserter under the immigration laws is not privileged to remain long ashore, he must join another ship. Ships under the flag from which he deserted are not open to him without incurring the risk of severe penalties imposed by other countries for desertion. The laws of most countries require a large percentage of their crews to be citizens or subjects, and shipment accordingly under other flags is difficult. The American ship, on the contrary, offers the inducements of very much higher wages and, on the whole, easier conditions of life and disciplinary regulations, much less strict under the Seamen's Act than those obtaining on foreign ships."

The union would display better judgment and command more confidence in its integrity if it would be fair with the public. Suppression of some facts and misrepresentation of others does not pay.

## Chinese Seamen Strike

A strike of Chinese seamen, which had been brewing for several weeks, materialized about the middle of January, to the discomfiture of American companies in the trans-Pacific and Oriental feeder services. The walkout opened with a bang and, according to reports from Hongkong, threatened to prevent calls of liners at Chinese ports if not the complete suspension of sailings. Hongkong was the heart of the strike, but Shanghai was quite loyal to the cause of the seamen.

### 40 Per Cent Increase Demanded

Aside from the demand of the men for a wage increase of 40 per cent, which might be granted and might not, the trouble is a sympton of the spread of organized unionism in the Orient. How rapid that spread has been is difficult for one to comprehend unless he has kept his gaze centered upon Japan, for it is literally true that not a month of the last three years has passed without Japanese labor asserting itself and often improving its strategic position materially. Now that the Chinese have joined in the demand for higher wages, the Orient appears to be on the verge of a very real awakening.

Most persons in touch with marine operations are well aware that Chinese stewards have been employed by the Pacific Mail for years. Indeed, under the old management, Chinese were used in all departments. This fact and the difficulty, or supposed difficulty, that the men would experience in complying with the requirements of the Seamen's Act gave considerable concern to the Pacific Mail and eventually led, perhaps in conjunction with other causes, to the sale of the fleet. When the new company appeared on the scene it endeavored to operate its steamers with Caucasian stewards. Anyone who witnessed the conduct of the Ecuador's crew in Honolulu in September, 1916, knows why the experiment ended in failure and why the company abandoned its attempt to employ whites. Since that unhappy experience the Pacific Mail has had Chinese stewards, but Caucasian deck-hands and fire-crews; and the Pacific Steamship Company put Filipinos aboard its fleet of 535's.

### Good White Stewards Scarce

Few would assert that Chinese and Filipinos are more expensive than Caucasians, but one may doubt whether the lower wages received by Orientals are of really great importance in determining their selection. The fact is that Caucasian stewards on the Pacific Ocean never have been markedly successful; in too many cases they have been intolerable. Work that the white regards justly as menial is not work that will attract good men; yet good men, on the other hand, are required for the successful operation of such vessels as the Pacific Mail and Pacific Steamship 535's. A passenger who pays several hundred dollars for his Seattle-Manila passage demands better service than ninety-nine white stewards in one hundred are disposed or able to give.

In view of such circumstances as these there is little doubt that the trans-Pacific lines will continue to employ Oriental stewards. The whole question is whether the men will win the strike. They are reported to have walked out as a body from all vessels, British as well as American.

## The N. Y. K. Report

Copies of the report of the Nippon Yusen Kaisha for the six months ending September 30, which have been received from Tokyo, show clearly that even the premier shipping company of Japan is feeling the world's business depression. The net profit, including yen 478,158.80 brought forward from the preceding account, was yen 3,809,201.50, as compared with yen 12,433,280, including yen 3,044,331 brought forward, for the six months ending September 30, 1920. Such figures as these speak for themselves. By transferring yen 2,800,000 from the dividend equalization fund, however, the company was able to declare a dividend of 10 per cent for the six months, or at the rate of 20 per cent a year, as against 15 per cent, or 30 per cent a year, for the six months ending September 30, 1920, and 12½ per cent, or 25 per cent a year, for the six months ending March 31, 1921. The 1919 dividend was 100 per cent.

In spite of the transfer of yen 2,800,000 from the dividend equalization fund, however, that fund shows no change in the company's report, still standing at yen 22,600,000. This fact probably is to be explained by bookkeeping methods that are not apparent in the report itself; at any rate, the comparison of net profits and balances carried forward, which was made above, is significant of the state of affairs in shipping. Assets and liabilities balance at yen 208,448,630.89 as compared with yen 219,154,202.24 September 30, 1920.

To American shipowners perhaps the most interesting exhibit, apart from the dividend account, is the book value of the N. Y. K. fleet. This stands at yen 57,945,421.41 as against yen 41,126,184.73 on September 30, 1920; and the average value a gross ton has increased from yen 83, or about $41.50, to yen 112. This increase is to be explained by the addition of new steamships to the company's fleet, which on September 30 aggregated 517,090 gross tons as compared with 494,028 September 30, 1920, although the number of vessels had declined from 103 to 102. Eight vessels of 52,781 tons were listed as under construction September 30, 1921, and twelve of 84,240 a year previous.

## Shipping Notes

The Pacific Coast shipping directory that was published in the January number of Pacific Marine Review has been reprinted in booklet form. Copies will be sent free of charge to those who desire them.

* * *

In the shipping directory Castle & Cooke are listed as the Honolulu agents of the China Mail Steamship Company. This is in error, Fred L. Waldron, Ltd., being the agent.

* * *

The Commercial Pacific Cable Company tells rather briefly of a singular piece of work done by the Midway staff, which, under the direction of William Pimley, Midway superintendent, went out six miles in small boats and by difficult hand labor raised a broken cable and put in a temporary splice, thus obviating a long delay in effecting resumption of service. A feat such as this is worth decidedly more space than was given in the brief announcement.

* * *

Announcement is made that the Six-Minute Ferry Company, San Francisco Bay, which is building two boats at the Bethlehem plant, has sold its San Francisco-Oakland rights and property to a syndicate headed by James Rolph, Jr. The deal involved about $1,400,000.

* * *

The General Steamship Corporation, San Francisco, has opened a chartering department in charge of Erik Krag, formerly of the East Asiatic and other Scandinavian companies.

* * *

Announcement is made that railroads and steamship lines have agreed to absorb wharfage charges of 15 cents a ton on Oriental freight passing through San Francisco. This action is one more move in a little traffic war that Seattle and San Francisco have been waging. The following comparison of costs following the absorption was made by San Francisco: San Francisco—Tolls, 7½ cents; handling, 36 cents; total, 43½ cents. Seattle—Wharfage, 25 cents; handling, 40 cents; total, 65 cents.

* * *

The Luckenbach Steamship Company announces the opening of a Buffalo office at 1024 Prudential

Building in charge of J. J. McTague, local manager.

* * *

Effective January 1, the Los Angeles General Steamship Agents, Inc., became representatives and general agents in Southern California of Struthers & Barry, who operate Shipping Board freighters from San Francisco and Los Angeles to Honolulu and the Orient.

* * *

The Shipping Board 535 Silver State, operated by the Pacific Steamship Company, arrived at Victoria in January after a voyage from Yokohama of 9 days, 16 hours and 30 minutes, two hours less than her former record.

* * *

The Ocean Motorship Company, San Francisco, announces that it will enter the Pacific coastwise trade with some of the wooden motorships purchased of the Australian government.

* * *

Frank Waterhouse & Company, Seattle, was placed in the hands of a eceiver in January on petition of he Northern Pacific Railway Company. Liabilities were approximately $500,000; no statement as to assets was made, but Mr. Waterhouse asserted that they could be made, with proper conservation, to exceed ll liabilities by far. Shipping companies heretofore represented by the ompany will be represented by Mr. Vaterhouse personally.

* * *

Furness, Withy & Company will maintain a monthly San Francisco-Orient service with vessels of the Prince Line, beginning in March. Swayne & Hoyt have been appointed San Francisco agents.

* * *

The Alaska Steamship Company has announced the withdrawal of he steamship Cordova from the Columbia River-Hawaiian service after a trial of six months. She was needed elsewhere, it was said, but the ompany also stated that lack of eturn cargoes to the Pacific Coast had been a great handicap to profitable operation. In recent years no ompany has made a success of a Pacific Coast-Hawaiian service without eastbound sugar cargoes; for hat reason, if for no other, the experience of the Los Angeles Steamship Company with the Aeolus and Huron will be watched closely.

* * *

The Pacific Mail's intercoastal passenger service, the terminal of which had been Baltimore, was extended to New York with the sailing of the Venezuela from San Francisco in January. The company has acquired the Grace steamship Santa Ana and with her and the Colombia, Venezuela and Ecuador will maintain sailings each eighteen days.

* * *

George A. Moore & Company, San Francisco, announce that they have been appointed general agents of a new line of Norwegian motorships, which will ply between the Pacific Coast and Continental and Scandinavian ports.

* * *

The Seattle Chamber of Commerce says: The fastest movement of freight ever recorded between Japan and New York was registered on seven carloads of raw silk which left Yokohama on the Shipping Board liner Wenatchee, routed for Seattle, where the cargo was put on board a special express train. The silk arrived in New York December 13, fourteen days, four hours and thirty minutes after the boat left Yokohama. The Wenatchee, one of the five Shipping Board 535-foot passenger boats operated between Seattle and China, Japan and the Philippines, made the trip from Yokohama to Puget Sound in ten days. It is understood that ships on the Yokohama-Seattle run, the short route across the Pacific, are preparing to guarantee delivery of silk from Yokohama to New York in twenty days or less.

* * *

The Matson Navigation Company hereafter will do its own stevedoring in Honolulu, replacing McCabe, Hamilton & Renny.

* * *

A tentative report submitted to the Interstate Commerce Commission by an examiner upholds the right of the Isthmian Line, owned by the United States Steel Products Company, the United States Steel Corporation's selling agency, to operate vessels in the intercoastal trade. Other steamship lines operating through the Panama Canal attacked the Isthmian Line on the ground that the Steel Corporation was an owner of transcontinental railroads and as such could not engage in Panama trade.

* * *

The following proposal, said to have been made by American shipowners to their Japanese friends, should be of great interest: In case the Japanese ships in Atlantic services are withdrawn, the American ship owners will withdraw all their ships from the Pacific services. In the event of an agreement between the American and Japanese ship owners, the United States government will exercise due consideration in the application of Articles 28 and 34 of the Jones Regulations to Japanese ships.

* * *

Following upon the acquisition of the ex-German Callao for the Pacific Steamship Company's coastwise trade, comes an announcement that the company has purchased the Northern Pacific, built by James J. Hill for a San Francisco-Flavel service, but sold during the war to the government. The Northern Pacific and her sister, Great Northern, are the fastest merchantmen ever built in the United States. They have made sea-speeds of 23 knots or better.

* * *

**E. A. Christenson** has been re-elected president of the Shipowners & Merchants' Tugboat Company, San Francisco, and Thomas Crowley vice president and general manager. Thomas Hayes of the Union Oil Company was elected director to succeed W. Leslie Comyn. Other directors, re-elected, are: Andrew F. Mahony, James B. Smith, Herbert Fleishhacker, William Humphreys, A. K. Tichnor, James Tyson, Stanley Dollar, Edwin T. Ford of W. R. Grace & Company, John R. Hanify and Robert Reid of Balfour, Guthrie & Company.

**Captain Nels J. Rasmussen** has been appointed pilot at Los Angeles.

**P. F. Selleck** has been appointed office manager of the Los Angeles General Steamship Agents.

## Deaths

**Captain Daniel E. Friele** (Ninety-fathom Dan), retired commodore of the Pacific Mail, in San Francisco December 28.

**Captain J. J. Shea,** San Francisco bar pilot, in San Francisco.

**W. J. Jones,** of W. J. Jones & Company, Seattle stevedoring firm, in San Francisco December 19.

**Mrs. James Griffiths,** wife of the president of James Griffiths & Sons, in Seattle January 12.

**B. B. Earle,** formerly of the Pacific Coast Company and Northern Pacific Railroad, Seattle, and of the North American Transportation & Trading Company and Northern Navigation Company, St. Michael, and more recently of the auditing department of the American Yukon Navigation Company, Skagway, in Skagway January 3.

**John A. Donald,** former member of the United States Shipping Board, in Rye, New York, January 14.

**M. J. Mayfield,** secretary of the California Pacific Westbound Conference, in San Francisco January 21.

# With the Shipbuilders

## Vessel for Inter-Island

Proposed plans of a combination steamship for the Inter-Island Steam Navigation Company of Honolulu, to cost about $1,000,000, have been sent by Pillsbury & Curtis, San Francisco, to thirteen shipyards, five on the Pacific Coast and eight on the Atlantic, with requests for bids, which will be opened February 13. Whether the vessel will be built now or whether she will be modified will depend upon tenders received; but indications are that bids will be sufficiently low to permit her to be constructed practically as drawn, although the plan still remains "proposed." The decision of the Inter-Island to seek tenders follows a delay of more than a year, during which, it is quite evident, building costs have decreased greatly and have justified the company's policy. This is the only new work of consequence that has originated on the Pacific Coast in more than twelve months, and it is, therefore, of unusual importance. Plans of the vessel will be found on an insert following this page.

### Much Improved Service

A marked development of the Inter-Island's Honolulu-Hilo traffic and a greatly increased competition led the company to plan a vessel considerably more ambitious than anything yet constructed for Hawaiian service. A sea-speed of 17 knots will permit her departure from Honolulu at 5 p. m. and arrival at Hilo at 7 a. m., the voyage being two or three hours shorter than the fastest now provided by the company's schedule. Passenger accommodations will take 334 in the first-cabin and 100 in the third; and in the latter class standee bunks will be installed, so that, except in times of heavy travel, the present system of putting third-class passengers on the open decks will be done away with. There will be cargo space for about 2300 measurement tons and refrigerator space for 64 tons.

The vessel will be 360 feet long overall, 345 between perpendiculars; of a molded beam of 46 feet and molded depth of 32; a mean draft of 20 feet; a displacement of 5535 tons and a wetted surface of 21,680 square feet at maximum draft of 22 feet forward and 22 aft. Her trial speed will be 16½ knots, but builders will be required to construct an engine of approximately 5400 to 5500 horsepower to drive her at a sea speed of 17 knots in all weather. Because of that feature of the specifications details of the engine are not laid down; it will be, however, a four-crank triple-expansion, the steam to be supplied by four Babcock & Wilcox oil-burning watertube boilers having 19,235 square feet of heating surface and a working pressure of 220 pounds. The boilers will not be equipped with superheaters. Three boilers must have power sufficient for the maximum demands of the main engine, so that one may be in reserve. The fuel-oil capacity will be 926 tons. One right-hand screw propeller will be installed.

### Special Automobile Facilities

The steamship will be flush-decked with a raised forecastle; and will have two decks as to hull and two as to superstructure, the lower superstructure deck being carried forward to the forecastle; a complete double-bottom; two masts, one funnel, wireless and refrigerating apparatus, a telephone system, two hatches and three side-ports on each side. The ports and hatches will be of sufficient size to permit the largest motor-cars to be handled with their tops up, the cargo space at the forward end of the second deck having been designed especially for transporting automobiles of passengers bound to Kilauea volcano.

Bilge keels will be installed amidships for 40 per cent of the vessel's length. She will be built on the transverse system with seven watertight bulkheads. She will carry the following stockless anchors: two bower, 5600 pounds each; one bower, 4760 pounds; one stream, 2100 pounds; one kedge, 840 pounds. Eight Steward lifeboats are specified. The windlass, deck winches, steering gear, etc., will be steam, Allan Cunningham specified.

The vessel will be built to highest class, American Bureau of Shipping.

## Other New Work

The Atlantic Coast Shipbuilders' Association says that "exclusive of large repair contracts and port development plans recently projected, new vessel construction, bids for which have not yet been opened but which are definitely contemplated, aggregate an expenditure of approximately $10,000,000."

Reports from Vancouver say that P. H. Vanneter, representing Fisher & Tom, Shanghai, has arrived in Vancouver to seek tenders for the construction of a steel stern-wheeler for Yangtse service. The vessel would be about 130 feet long, 30 wide, and have a speed of about 15 knots. If built on the Pacific Coast she would be shipped knocked-down and assembled in China.

The Wah Chang Trading Corporation, represented in New York by Samuel Fung, with offices in the Woolworth building, is in the market for a design of a steel dredger of the self-propelled type, having a square stern with bucket ladder wheel at center from midships to the stern. The vessel is to be built in China, but certain parts are to be fabricated in the United States to facilitate erection. The dredger is to be 120 feet long over-all, 22 feet 6 inches in beam, and 8 feet in depth. It will be built primarily for the dredging of soft soil from river beds and is to have a maximum dredging depth of 25 feet with a dredging capacity of 400 cubic yards an hour.

Plans and specifications for five new packets to ply between New York and Buffalo on the canal are being worked out by a New York engineer. The boats will be equipped with Diesel electric drive and it is estimated will cost close to a million dollars. Preliminary figures place the length of the boat at about 160 feet with a carrying capacity of 500 tons each.

The Manitowoc Shipbuilding Corporation, Manitowoc, Wisconsin, has been awarded a contract to fabricate a new steel hull for the tug J. H. Meyer to be 99 feet over-all, with 22-foot beam and 12 feet 6 inches in depth. While present machinery and equipment will be used in the new hull, it is understood that some replacement work will be necessary.

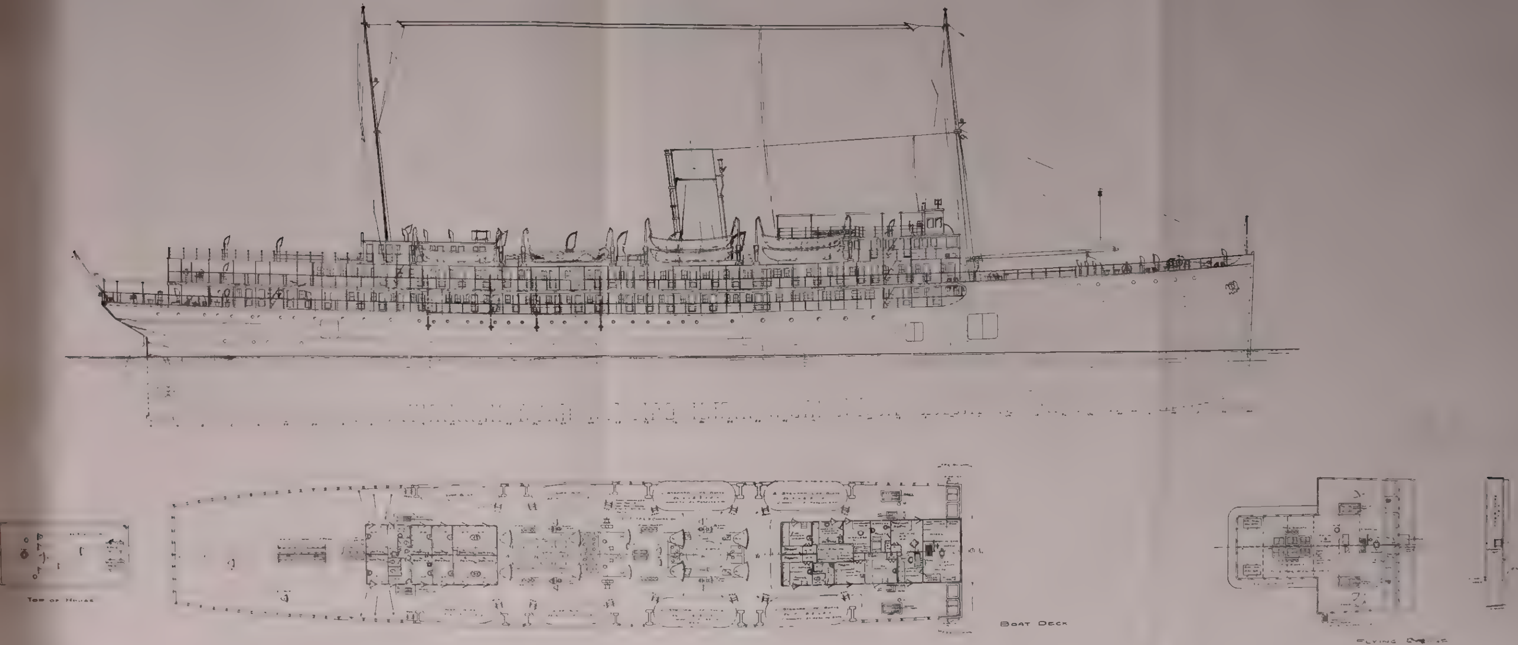
Contracts for the construction of a 550-foot Lake freighter have been awarded by the Matthews Steamship Company of Toronto to the Port Arthur Shipbuilding Company.

Canadian Vickers, Montreal, reports that work on an ice-breaker for the Canadian government has been held up.

## Lloyd's Returns

So marked has the shrinkage in shipbuilding now become that this country today actually has a smaller percentage of the total construction of the world than it had before the war, says a statement issued by Lloyd's Register of Shipping, covering the returns for the quarter ended December 31. While the depression is general, it is pointed out, the most marked effects are shown in the United States. Three months ago France, Holland and Italy were constructing less tonnage than this country. Today each of them is building more than American yards have under way. No returns are

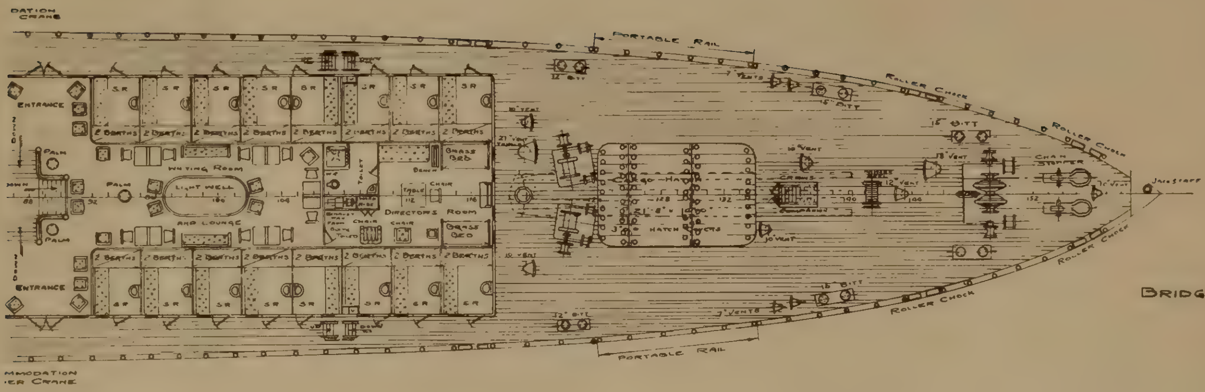
# Proposed Plan of Passenger Steamship for Inter-Island Steam Navigation Company of Honolulu



Outboard Profile and Plan of Boat Deck

(Over)

# d Steamship



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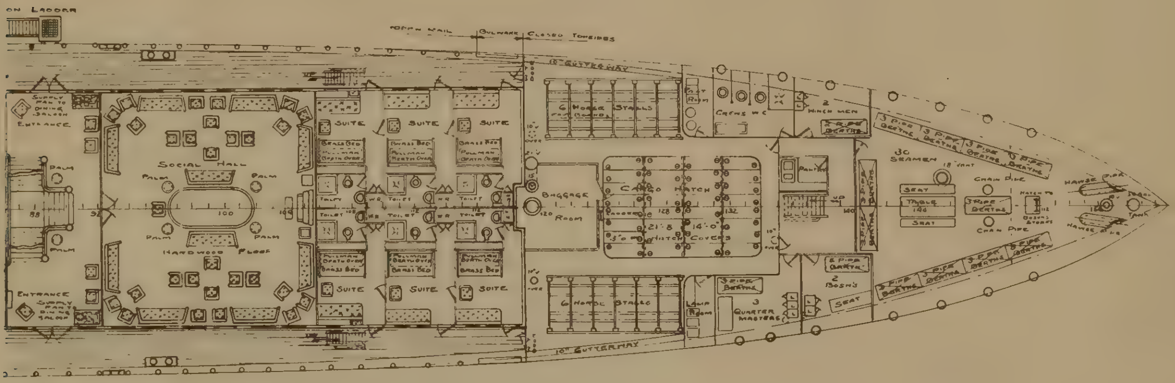
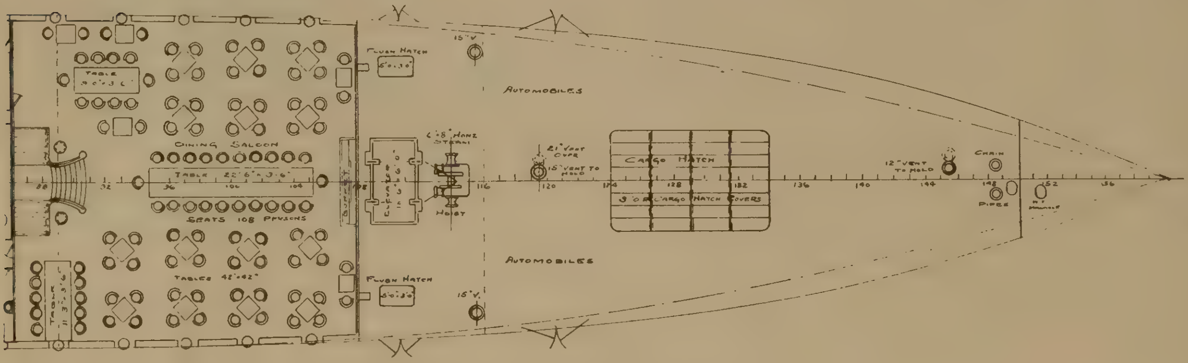
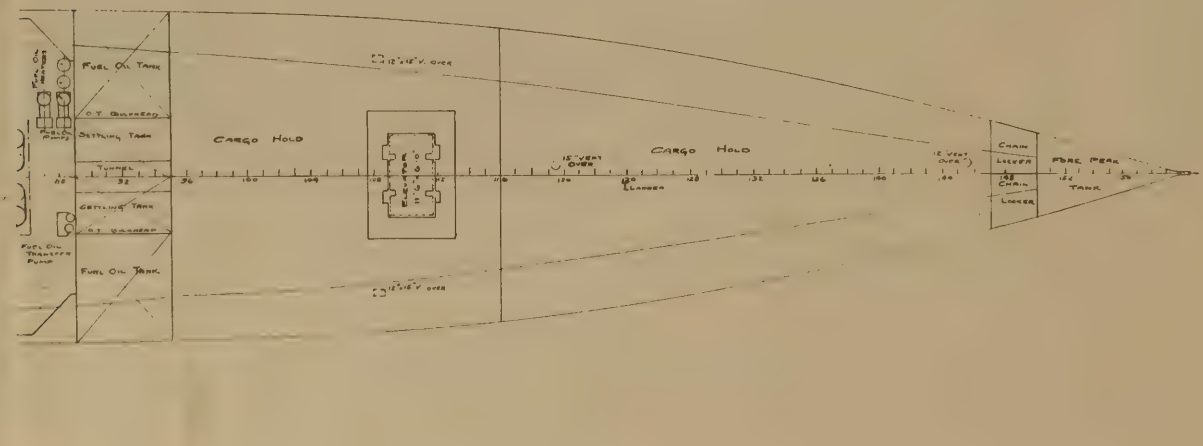


UPPER DECK



2ND. DECK



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available for Germany, but the total of construction there is probably second only to that of the United Kingdom.

### Decline of Million Tons

As compared with the preceding quarter, the total shipbuilding throughout the world at present shows a decline of more than a million tons gross, of which the British decrease represents about 640,000 tons, the American about 215,000 tons, and that of the other countries combined about 225,000 tons. The total for the United States, however, is now only half what it was three months ago, while the British decline is only about a fifth, and that of other countries only about a tenth from the total of the preceding quarter. The decline during the past three months is shown by the following table, giving in gross tons the aggregate of construction work:

| | Jan.1,1922 | Oct.1,1921 |
|---|---|---|
| United States .... | 216,428 | 433,962 |
| United Kingdom | 2,640,319 | 3,282,972 |
| Other countries | 1,600,346 | 1,826,044 |
| World ............ | 4,457,093 | 5,542,978 |

It is stated by Lloyd's Register, however, that the present world construction figure does not show the full extent of the contraction in shipbuilding, as work has been ordered suspended on more than 1,100,000 gross tons, of which more than 700,000 tons represent work in British shipyards. The actual status, therefore, is as follows in gross tons:

| | Britain | World |
|---|---|---|
| Work contracted | 2,640,319 | 4,457,093 |
| Less suspensions | 722,000 | 1,122,000 |
| Actual total ...... | 1,918,319 | 3,335,093 |

Although the total of world construction has not yet fallen to the pre-war figure, it is rapidly approaching that level. In comparison with the present aggregate of actual work in progress, of 3,335,000 gross tons, the total under way on June 30, 1914, was 2,946,000 tons. The present British total of 1,918,000 tons compares with 1,747,000 tons in 1914, and the American aggregate of 216,000 tons with 148,000 tons. The present total for the United States contrasts with 4,186,000 gross tons for the first quarter of 1919, when this country was building more than all the rest of the world combined. The United Kingdom now holds that position, with about 60 per cent of the aggregate building throughout the world.

How the proportionate shares of the world's ship construction have compared since the pre-war period and during the past year is indicated by the following table, giving the percentages of work:

| | June 30, '14 | Jan. 1, '21 | Jan. 1, '22 |
|---|---|---|---|
| United States........ | 5.0 | 18.2 | 4.9 |
| United Kingdom.. | 59.3 | 5.17 | 59.2 |
| Other countries.... | 35.7 | 30.1 | 35.9 |

Further decreases are reported in the construction of tankers, the world total at the beginning of the year being 793,000 tons, as compared with 931,000 tons in the preceding quarter. During this period the aggregate of oil-carriers building in the United States dropped back from 222,000 tons to 103,000, while in other countries, excluding Great Britain, the decline shown was from 182,000 tons to 153,000. There was a slight advance in the total of the work under way in the United Kingdom, the present total being 536,000 tons, compared with 527,000 in the preceding quarter.

### Little New Work

The great scarcity of new work is evidenced by the returns of Lloyd's Register, showing that during the past quarter work was begun on only 54,000 gross tons of vessels, while in the same period hulls representing 466,000 tons were launched. In the last quarter of 1920, work was begun on 503,000 tons, while 576,000 tons were launched.

Excluding Germany, the greatest volume of shipbuilding in any country outside the United Kingdom is being done in Italy, followed closely by France and Holland. Japan is now building only 145,000 tons. Construction has also fallen off sharply in the British dominions. How work in a number of countries compares with a year ago is shown in the following table:

| | Jan. 1, 1922 | Jan. 1, 1921 |
|---|---|---|
| Italy .............................. | 393,832 | 363,000 |
| France .......................... | 352,635 | 397,000 |
| Holland ........................ | 313,879 | 450,000 |
| British dominions.. | 66,469 | 186,000 |

The 3,335,000 tons actually under construction in the world today compares with the peak of 8,048,000 tons attained in September, 1919, a loss of 4,700,000, or nearly 60 per cent.

## American Building

The American Bureau of Shipping reports that 27 seagoing steel merchantmen of 213,060 gross tons for private account and 4 vessels of 42,000 gross tons for the Shipping Board were under construction in yards of the United States January 1, the total being 31 vessels of 255,060 tons. The decline from the work of December 1 was 15 vessels of 86,107 gross tons, all for private account. Ten of the vessels building or under contract January 1 were cargo-carriers, their gross aggregating 63,760 tons; 17 vessels of 149,300 were tankers and 4 of 42,000 tons were combination vessels, the last being for the Shipping Board. Five vessels of 45,000 gross tons were to be turbine driven; two of 15,600 tons were to be Diesel-engined; and 20 of 152,460 tons were to have reciprocating engines.

## Pacific Building

Four seagoing steel merchant vessels of an aggregate of 70,000 deadweight tons were under construction or contract in yards of the Pacific Coast of the United States and Canada January 1, according to statistics compiled by Pacific Marine Review. There was no change from the work on hand December 1, no vessels having been delivered during the month. All construction is at the Union Plant, Bethlehem, and consists of two tankers of 15,000 deadweight tons each for the Standard Oil Company of California and two ore and coal carriers of 20,000 deadweight tons each for the Ore Steamship Company. The keel of neither of the latter has been laid.

According to investigations made by the Japanese Department of Communications, ships of 1000 tons and up which were launched during October numbered three, of 5750 tons, or an increase of two in number and 4450 in tonnage, over September. However, the figures show a decrease of three in number and 14,150 in tonnage as against those launched during the same month of last year.

During the first ten months of 1921 thirty-eight ships of 196,915 tons were constructed in Japan. Compared with those built during the same period of last year, they show a decrease of forty-six in number and 177,645 in tonnage.

## The Bethlehem Extension

In purchasing the Los Angeles yard of the Southwestern Shipbuilding Company, the Bethlehem Shipbuilding Corporation has taken a long step toward attaining a commanding position in ship-repairing on the Pacific Coast, a position comparable to that which its six Atlantic yards give it on that seaboard. Heretofore the Bethlehem interests of the Pacific Coast have been centered on San Francisco Bay, where the Potrero and Alameda Works and Hunters Point drydock of the Union Plant are situated. The magnitude and strategic position of this group have been elements of great importance in shipbuilding and ship-repairing; but since overseas trade began to languish two years ago and intercoastal trade assumed the lead, it has become apparent that Los Angeles, as the southernmost port of call of most of the intercoastal steamships, could not be ignored. Consequently the Bethlehem interests have had their eyes on Southern California for several months, during which they were represented as about to buy Southwestern and Los Angeles Shipbuilding & Drydock Company by turns; formal announcement of the Southwestern purchase having been made, an end has been put to the natural suspense of rivals who wondered what "Joe" Tynan would do.

"When a new demand arises for ships we'll build ships there," said Mr. Tynan in discussing the future of Southwestern. "In the meantime we shall start immediately to equip the yard with everything necessary to make it one of the most efficient ship-repair plants in the world." The plant, however, will be more than a shipyard; the Bethlehem Steel Corporation, the parent-company of the Bethlehem Shipbuilding Corporation, will carry a large stock of fabricated steel at the yard and will fabricate structural equipment there, as well as manufacture Diesels, oil-well equipment, mining machinery and material for bridge construction for export as well as domestic consumption. On the score of ship-repairing a 12,000-ton floating drydock will be in operation within a few weeks, and the machine shop will be reorganized and its equipment supplemented with machine tools capable of handling any kind of engine-repair work. A blower system for use in connection with the repair of oil-tankers and a large electric-welding outfit will be installed. The power plant will be reorganized and current will be bought of the municipality.

Bethlehem now owns the following plants: on the Atlantic, Fore River, Moore, Harlan, Baltimore Drydock, Sparrows Point, Redington; on the Pacific, Union (Potrero, Alameda, Hunters Point drydock), and Southwestern.

## Yards Closed

Following the delivery on December 20 of the steamship New Jersey, built for its own account, the construction department of the Texas Steamship Company, Bath, Maine, issued the following statement January 1: "Having completed all of the thirty-five vessels called for by the Texas Steamship Company's current shipbuilding program, this shipyard closes January 1, 1922, and will remain closed for an indefinite period."

### Chickasaw to Be Closed

It is announced that the United States Steel Corporation is planning to stop the construction of ships at the plants of its subsidiary company, the Chickasaw Shipbuilding & Car Company, on the Chickasaw River near Mobile, Alabama, and to turn that plant exclusively into the manufacture of railroad cars. It is said that the company plans to enter the car business on a very much broader scale than it has ever before attempted. The Seaboard Air Line Railway Company stated January 9 that it had placed an order with the United States Steel Corporation for 2000 cars to be constructed at the Chickasaw works.

P. Leroy Harwood of New London, Connecticut, has been appointed trustee of the bankrupt Groton Iron Works by Thomas M. Shields, referee in bankruptcy. The company is a C. W. Morse concern and it is reported that Morse interests have unsecured claims of more than $1,000,000.

### Shipyard Employment

Working force reports now being received from Atlantic and Gulf Coast shipyards and ship repair plants covering the last pay roll in December, 1921, indicate that the great reduction in employes engaged on ship construction and maintenance work which started with the beginning of the year is coming to an end and most of the workers now employed will probably be retained, says a statement of the Atlantic Coast Shipbuilders' Association. Reports from the members of the association for the last quarter of 1921 are incomplete, but twenty companies that have thus far reported employed a total of 21,763 workers exclusive of supervisory forces, this being a reduction of only 5945 from the 27,708 employed by the same companies during the preceding three months. Beginning the year with 70,933 shipyard workmen these twenty yards laid off near 50,000 employes during the twelve months of 1921. The Jahncke Drydock & Ship Repair Corporation of New Orleans, Louisiana, and the John H. Mathis Company's yacht building and ship repair plant at Camden, New Jersey, are the only members thus far reporting to show larger working forces in December than the last pay roll for the quarter ending September, 1921. The total employes on the last pay roll of each quarter during the past year as compared to those on the final pay roll of 1920 in the twenty plants from whom reports have been received are as follows: December, 1920, 70,933; March, 1921, 59,026; June 1921, 45,240; September, 1921, 27,708; December, 1921, 21,763.

## In the Yards

A contract has been awarded to the Newport News Shipbuilding & Drydock Company for extensive repairs to the Standard Oil tanker F. D. Asche, which grounded in the Bahamas last year. Her bottom was ripped off, but she was salvaged and towed to New York. The Asche was built by Newport News in 1918.

* * *

The battleship Kaga, first of two dreadnoughts of the Japanese navy's 1918 program, was launched at the Kawasaki yard, Kobe, November 17. Her keel was laid July 20, 1920. The Kaga and her sister, the Tosa, if completed, would be considerably larger than the Mutsu, with displacements of about 40,600 tons as against 33,800, and would have ten 16-inch guns as against eight of the Mutsu and her sister, the Nagato.

* * *

A claim of the Patterson-McDonald Shipbuilding Company, Seattle, for $275,000 has been allowed by the Shipping Board. The claim arose from cancellations of wooden vessels building for the government.

* * *

The original building program of the Canadian Government Merchant Marine was completed in January, when the 10,500-ton steamer Canadian Constructor was turned over to government officials by her builder, the Halifax Shipyards, Ltd.

* * *

Yarrows, Ltd., Victoria, has received a contract from the Saanich municipality to supply cast iron pipe for a new water system. Some new equipment was added to the plant to handle this work.

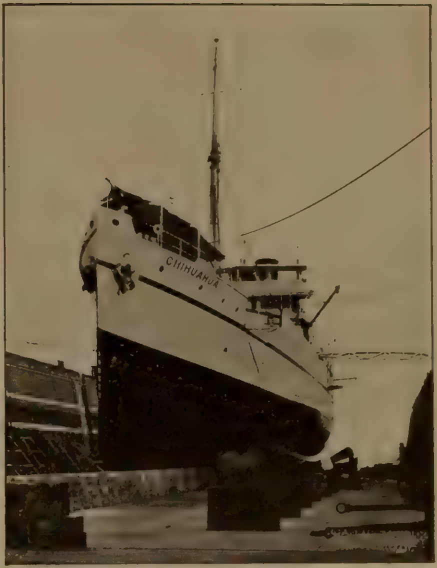
* * *

A contract for repairing and overhauling the steamer Admiral Farragut of the Admiral Line has been awarded to the Wallace Shipyards of North Vancouver, B. C., which offered to do the work for $63,500 Canadian. Bids submitted by Tacoma, Seattle, Oakland, San Francisco and Los Angeles yards ranged from $98,000 to $110,000.

* * *

Special preparations are being made for the fabricating of pipe for the Catskill Aqueduct, contracts for which were recently awarded to the Merchant Shipbuilding Corporation. The pipe line contract involves approximately 10,000 tons of riveted steel piping 7 feet 4 inches to 8 feet 6 inches in diameter in sections of 22 feet 6 inches. It is estimated that there will be six and one-half miles of riveted steel piping when the job is completed.

The engravings on this page are of the steamships Colima and Chihuahua, which have been dispatched to the Pacific to enter the service of the Mexican States Line between Los Angeles and Mexican ports. These vessels were built in Britain during the war to serve as decoys for submarines, which discovered that the slow and clumsy tramps really mounted guns behind canvas shields. On the left is a view of the Colima's stern. Note the dummy rudder. On the right is the Chihuahua in the floating drydock of the Los Angeles Shipbuilding & Drydock Co.



The Emergency Fleet Corporation announced January 13 that it had definitely determined not to spend further money on reconditioning former German vessels except the Leviathan. A recent suggestion that the Mount Vernon and the Agamemnon be repaired and placed in North Atlantic trade has not been seriously considered. The Fleet Corporation has ruled that a majority of the former German liners will be obsolete within a year or so and that it would be poor business judgment to make heavy expenditures on any of them now. Of the twenty-eight enemy vessels seized during the war only six remain in commission. The government already has spent more than $32,000,000 on these vessels.

* * *

## Pacific Deliveries

H. M. Storey, tanker Standard Oil Company of California, Bethlehem Shipbuilding Corporation, Union Plant, January 7.

Modoc, cutter United States Coast Guard, Union Construction Company, January 14.

## Atlantic Launchings

R. D. Leonard, tanker Atlantic Refining Company, Bethlehem Shipbuilding Corporation, Harlan Plant, December 31.

## Atlantic Deliveries

Lone Star State, combination United States Shipping Board, New York Shipbuilding Corporation, Dec. 31.

Munargo, combination Munson Steamship Company, New York Shipbuilding Corporation, December 31.

New Jersey, tanker builder's account, Texas Steamship Company, December 20.

## Pacific Coast, United States

**All navy yard work is suspended or is progressing slowly.**

### BETHLEHEM SHIPBUILDING CORPORATION, LTD.

#### Potrero Works

Purchasing Agent: O. W. Street.

Submarines USN: S-31, hull 136; S-32, hull 137; S-33, hull 138; S-34, hull 139; S-35, hull 140; S-36, hull 141; S-37, hull 142; S-38, hull 143; S-39, hull 144; S-40, hull 145; S-41, hull 146; all launched; outfitting proceeding slowly.

#### Alameda Works

Chilore, hull 5309, combination ore and coal carrier Ore Steamship Co; 571-6 LOA; 550-1 LBP; 72 molded beam; 44 molded depth; 32-4 loaded draft; 11½ loaded speed; 20,000 D WT; Curtis turbines with Falk reduction gears, 5000 SHP; 3 Scotch SE boilers, 17-6x12, each 4287 sq ft; oil burners.

Lebore, hull 5310, combination ore and coal carrier Ore Steamship Co; sister to above.

H. M. Storey, hull 5312, tanker Stand Oil Co of Cal; 500 LBP; 68 beam; 25-11 loaded draft; 11 loaded speed; 15,000 DWT; rec engs, 4000 IHP; 3 Scotch marine boilers, 16x 12-9; keel Jan19/21; launch Sept28/21; **deliver Jan7/22.**

W. S. Rheem, hull 5313, tanker Stand Oil Co of Cal; sister to above; keel Mar1/21; launch Oct28/21; deliver Jan31/22, est..

No name, hull 5314, ferryboat Six Minute Ferry Co; 230 LOA; 63-6 beam over guards, 42 molded; 19-6 molded depth; TE eng, 1400 IHP; propeller drive; 3 WT boilers; keel Aug27/21.

No name, hull 5315, ferryboat Six Minute Ferry Co; sister to above.

### HANLON DRYDOCK & SHIPBUILDING CO., OAKLAND

Purchasing Agent: R. Barker.

Dan F. Hanlon, hull 89, steam schr. D. J. Hanlon; 2500 DWT; 1400 IHP engines; 2 B&W boilers; work suspended.

### NAVY YARD, PUGET SOUND

Medusa, repair ship for government; 460 LBP; 70 beam; about 19 loaded draft; 17-5 loaded speed; turbine eng, 7000 IHP; 2 WT express type boilers; 10,000 tons disp; keel Jan2/20; launch and deliver dates not set.

Holland, submarine tender for government; 460 LBP; 61 beam; about 20 loaded draft; 16 K loaded speed; turbine eng, 7000 IHP; two WT express type boilers; 10,000 tons disp; keel Apr11/21.

### NAVY YARD, MARE ISLAND

Montana, battleship USN; 660 LBP; 105 beam; 33 loaded draft; 23 loaded speed; 42,200 disp; turbo-electric engs, 60,000 SHP; 12 Bu's express boilers, 74,040 sq ft; keel Sept 1/20.

Trevor, destroyer USN; 310 LBP; 30-11½ beam; 9-4 loaded draft; 35 loaded speed; 1215 disp; geared turbine eng, 26,000 SHP; 4 Normand boilers, 27,000 sq ft; keel Aug12/19; launch Sept15/20.

Perry, destroyer USN; sister to above; keel Sept15/20; launch Oct 29/21.

Decatur, destroyer USN; sister to above; keel Sept15/20; launch Oct 29/21.

### TODD DRYDOCK & CONSTRUCTION CORP., TACOMA

Purchasing Agent: C. L. Bankson.

Omaha, hull 100, scout cruiser US N; 555-6 LOA; 550 LBP; extreme beam 55-4; molded beam 54-9; depth molded 26; mean loaded draft 13-6; disp 7100 tons; Westinghouse Parsons turbines and reduction gear, 105,000 IHP; designated speed 34; 12 Yarrows WT boilers; keel Dec6/18; launch Dec14/20.

Milwaukee, hull 106, scout cruiser USN; sister to above; keel Dec13/18: launch Mar24/21.

Cincinnati, hull 107, scout cruiser USN; sister to above; keel May15/20; launch May23/21.

### UNION CONSTRUCTION CO., OAKLAND

Purchasing Agent: A. J. Farnesworth.

Modoc, hull 19, cutter USCG; 240 LOA; 39 beam; 14 loaded draft; 16 loaded speed; 1600 DWT; turbo-electric engs, 2600 IHP; 2 WT boilers; keel Apr19/21; launch Oct1/21; deliver Jan14/22.

Shawnee, hull 20, cutter USCG; 150 LOA; 30 beam; 13-6 loaded draft; 12½ loaded speed; 1000 DWT; rec engs, 1000 IHP; 2 WT boilers; keel Jun1/21; launch Nov15/21; deliver Feb1/22, est.

## Canadian

### CHOLBERG SHIPYARD, VANCOUVER, B. C.

Purchasing Agent: W. Meed.

(These vessels to be completed by Dominion government.)

Sir Henry Drayton, hull 5, 4-masted barkentine Victoria Shipowners, Ltd; 250 LOA; 45-6 beam; 21-10 loaded draft; 2400 DWT; sailing vessel; shaft logs fitted for auxiliary but no machinery installed; keel May 15/20.

No name, hull 6, 4-masted barkentine Victoria Shipowners, Ltd; sister to above; keel June4/20.

No name, hull 7, 4-masted barkentine Victoria Shipowners, Ltd; sister to above.

## Atlantic and Gulf

### AMERICAN BRIDGE COMPANY, PITTSBURGH, PENN.

Purchasing Agent: W. G. A. Millar.

Twenty-five coal barges Carnegie Steel Co; 175 LBP; 26 beam; 8 loaded draft; 24 launched, 24 delivered.

Two tow boat hulls Carnegie Steel Co; 149-2x34 4-5 loaded draft; launch and deliver one in Jan/22.

Fifteen decked barges, 120 LBP; 30 beam; 7 deep; US Engineers, Memphis, Tenn.

Two decked barges, undisclosed interests, 150x32x7-6; launch Mar/22, est.

Twelve sand barges, J. K. Davison & Bro., Pittsburgh, 135 x 26 x 10; launch Mar, Apr, May/22, est.

Two sand barges, H. H. Halliday Sand Co., Cairo, Ill.; 130x30x7-6; launch May/22, est.

### BATH IRON WORKS, LTD., BATH, MAINE

Purchasing Agent: John L. P. Burke.

Light vessel 106, hull 87, second-class light vessel US Dept of Commerce, 109-6 LBP, 30 beam, 14-4 loaded draft, 9½ speed; comp eng, 400 IHP; 2 Scotch boilers, 10-6 x 11-4; keel Apr1/22, est; launch Oct/22, est; deliver Dec/22, est.

Light vessel 107, hull 88, sister to above; keel May1/22, est; launch Nov/22, est; deliver Jan/23, est.

Light vessel 108, hull 89, sister to above; keel June1/22, est; launch Jan/23, est; deliver Mar/23, est.

Light vessel 109, hull 90; sister to above; keel July1/22, est; launch Mar/23, est; deliver Apr/23, est.

Light vessel 110, hull 91, sister to above; keel Aug1/22, est; launch May/23, est; deliver June/23, est.

### BETHLEHEM SHIPBUILD'G CORPORATION, BALTIMORE DRYDOCK PLANT, BALTIMORE

A. C. Crosby, assistant general manager in charge of purchases.

Hull 125, tanker builder's account; 340 LBP; 49 beam; 23-6 loaded draft; 10 loaded speed; 6000 DWT; rec. eng, 2000 IHP; 2 Scotch boilers, 15-3; keel Nov24/20.

Macy Willis, hull 126, tanker builder's account; 430 LBP; 59 beam; 25-4½ loaded draft; 10 loaded speed; 10,250 DWT; turb eng, 3000 IHP; 3 Scotch boilers, 15-3; keel Sept27/20; launch Dec22/21.

Hull 128, fireboat City of Baltimore; 115-6 LBP; 28 beam; 9-6 loaded draft; 12 loaded speed; rec eng, 1000 IHP; 2 B&W WT boilers; keel July15/21; launch Oct22/21.

### BETHLEHEM SHIPBUILDING CORP., FORE RIVER PLANT, QUINCY, MASS.

Lexington, hull 1300, battle-cruiser U S N.

Raleigh, hull 1382, scout cruiser U S N.

Detroit, hull 1383, scout cruiser U S N.

Massachusetts, hull 1400, battleship USN.

And the following nineteen submarines USN: AA-2, hull 1270; hulls 1309 to 1320 inc, submarines S-18 to S-29 inc; hulls 1389 to 1394 inc; submarines S-42 to S-47 inc.

J. Fletcher Farrell, hull 1496, tanker Sinclair Nav Co; 430 LBP; 59 beam; 25-5 loaded draft; 11 loaded speed; 10,600 DWT; rec eng, 3200 IHP; 3 Scotch boilers, 15x11-9; launch June10/21.

William Boyce Thompson, tanker Sinclair Nav Co; sister to above; keel Nov11/21; launch July/21.

### BETHLEHEM SHIPBUILDING CORP., HARLAN PLANT, WILMINGTON, DEL.

R. D. Leonard, hull 3477, tanker Atlantic Refining Co; 226 LBP; 39 beam; 17 loaded draft; 8½ loaded speed; 2600 DWT; turb eng, 750 IHP; B & W boilers; keel Aug20/21; launch Dec31/21.

### BETHLEHEM SHIPBLDG. CORP., SPARROWS POINT PLANT, SPARROWS POINT, MD.

Palmetto State, hull 4196, combination USSB; 518 LBP; 72 beam; 30-7 loaded draft; 16 loaded speed; turb eng, 10,000 IHP; 8 Yarrows boilers; keel Feb19/19; launch June 4/21.

Nutmeg State, hull 4197, combination USSB; sister to above; keel July29/20; launch Sept17/21.

Bethore, hull 4211, ore and oil Ore SS Co; 550 LBP; 72 beam; 32-4 loaded draft; 11½ loaded speed; 20,000 DWT; rec eng, 4600 IHP; 3 Scotch boilers, 17-6x12; keel Feb 24/21; launch Dec3/21.

Marore, hull 4212, ore and oil Ore SS Co; sister to above, except turb eng; keel May2/21.

Steelore, hull 4213, ore and oil Ore SS Co; sister to above; keel July 20/21.

### CONSOLIDATED SHIPBUILDING CORPORATION, MORRIS HEIGHTS, N. Y.

Purchasing Agent: Bruce Scrimgeour.

Lightship No. 105, US; hull 246; 146-3 LOA; 30 beam; 12-7 loaded draft; 825 DWT; comp eng, 400 IHP; 2 Scotch boilers, 10-6 diam; keel Mar4/21; launch Nov16/21; deliver Mar or Apr/22, est.

### WILLIAM CRAMP & SONS SHIP & ENGINE BUILDING CO., PHILADELPHIA

Purchasing Agent: Ed. C. Geehr.

Richmond, hull 448, scout cruiser USN; keel Feb16/20; launch Sept 29/21; 83 per cent comp Jan 1.

Concord, hull 449, scout cruiser USN; keel Mar29/20; launch Dec 15/21; 79 per cent comp Jan 1.

Trenton, hull 501, scout cruiser USN; keel Aug18/20; 55 per cent comp Jan 1.

Marblehead, hull 502, scout cruiser USN; keel Aug4/20; 47 per cent comp Jan 1.

Memphis, hull 503, scout cruiser USN; keel Oct14/20; 40 per cent comp Jan 1.

Installing Diesel engines in M.S. Californian.

### OSCAR DANIELS COMPANY, TAMPA, FLORIDA

B. D. Benson, hull 11, Isherwood tanker Standard Oil; 466 LBP; 60 beam; 26-7 loaded draft; 10½ loaded speed; 11,900 DWT; QE eng, 2800 IHP; 3 Scotch boilers, 15x11-6; keel June29/20; launch Sept5/21.

### FEDERAL SHIPBUILDING CO., KEARNY, N. J.

Purchasing Agent: J. L. Hastings.

Steel Navigator, hull 45, freighter US Steel Products Co; 425 LBP; 56 beam; 25-10 loaded draft; 12 loaded speed; 9400 DWT; turb engs, 3100 IHP; 3 Scotch boilers, 15 diam; keel July/21; launch Dec17/21.

### LAKE TORPEDO BOAT CO., BRIDGEPORT, CONN.

Purchasing Agent: C. D. Maxfield.

S-48, hull 48, submarine U S N; launch Feb26/21.

S-49, hull 49, submarine U S N; launch Apr23/21.

S-50, hull 50, submarine U S N; launch June18/21.

S-51, hull 51, submarine U S N; launch Aug20/21.

### MERCHANT SHIPBUILDING CORPORATION, CHESTER, PENN.

Vice-President: J. L. Ackerson.

Californian, hull 385, freighter American-Hawaiian SS Co; 445 LBP; 59-8 beam; 28-6 loaded draft; 11½ speed; 11,000 DWT; 2 6cyl, 4-cycle Diesel engs, 4500 metric; 1 vertical donkey, 400 sq ft HS; keel Feb5/21; launch Nov14/21; at Cramp yard for installation of Diesel engines.

Missourian, hull 386, freighter American-Hawaiian SS Co; sister to above; keel Feb10/21; launch Dec 14/21.

J. Hampton Moore, hull 387, fireboat City of Phila; 120-9 LOA; 28 beam; 12-9 deep; 9 loaded draft; comp eng, 500 IHP; 2 B&W WT boilers, oil; 4 turbine fire pumps, 1 30-foot tower, 2 15-foot towers; capacity 12,000 gals a minute; keel Sept 15/21; launch Dec20/21; deliver Jan 31/22, est.

### NAVY YARD, BOSTON

Whitney, destroyer tender No. 4 USN; 460 LBP; 60-10⅛ molded beam; 21-0½ normal draft; 16 loaded speed; 10,600 normal disp; geared Parsons turbs, 7000 SHP; 2 WT exp boilers; keel Apr 23/21; launching indefinite.

### NAVY YARD, PHILADELPHIA

Dobbin, hull 7, destroyer tender USN; 460 LBP; 60-10 beam; 21 loaded draft; 16 loaded speed; 10,600 tons disp; Parsons geared turb single screw engs, 7000 SHP; 2 WT boilers; keel Dec23/19; launch May 5/21; deliver date not determined.

Constitution, hull 8, battle cruiser USN; 850 LBP; 105-4 beam; 30-11½ loaded draft; 33½ loaded speed; 43,500 disp; electric drive, 180,000SHP; 16 WT boilers; keel Sept 25/20; launch and deliver dates not determined.

United States, hull 9, battle cruiser USN; 850 LBP; 105-4 beam; 30-11½ loaded draft; 33½ loaded speed; 43,500 disp; electric drive, 180,000 SHP; 16 WT boilers; keel Sept25/20; launch and deliver dates not determined.

### NEWPORT NEWS SHIPBUILDING & DRYDOCK COMPANY, NEWPORT NEWS

Purchasing Agent: James Plummer, 233 Broadway, New York City.

West Virginia, hull 211, battleship USN; 600 LBP; 97-3½ beam; 30-6 mean draft; 32,600 normal disp; 21 speed; GE turbo-elec drive, 28,900 SHP; 8 B&W WT boilers, oil, 41,768 sq ft plus 4168 superheat; keel Apr 12/20; launch Nov19/21.

Constellation, hull 215, battle-cruiser USN; 850 LBP; 101-8¼ beam; 31 mean draft; 43,500 normal disp; 33¼ speed, est; Westinghouse turbo-elec drive, 180,000 SHP; 16 WT boilers, oil, 198,000 sq ft plus 18,000 superheat; keel Aug18/20.

Ranger, hull 215, battle-cruiser USN; sister to above; keel June23/21.

Iowa, hull 258, battleship USN; 660 LBP; 105 beam; 33 mean draft; 43,200 normal disp; 23 speed; GE turbo-elec drive, 60,000 SHP; 12 White-Forster WT boilers, oil, 82,800 sq ft plus 8940 superheat; keel May17/20.

No name, hull 263, Diesel yacht Cox & Stevens; 180-6 LOA; 24 beam; 14 deep; keel Feb1/22, est.

### NEW YORK SHIPBUILDING CORPORATION, CAMDEN, N. J.

Purchasing Agent: L. G. Buckwalter.

Peninsula State, hull 252, combn USSB; 534 LBP; 72 beam; 30-6 loaded draft; 18 loaded speed; 11,000 DWT; geared turbs, 12,000 SHP; 8 WT boilers; keel July20/20; launch July6/21; deliver spring/22, est.

Lone Star State, hull 255, combination USSB; sister to above; keel May13/19; launch Oct23/20; **deliver Dec31/21.**

Munargo, hull 263, combination Munson SS Co; 414 LBP; 57-6 beam; 23 loaded draft; 15½ loaded speed; 4950 DWT; geared turbs, 5800 SHP; 5 SE Scotch boilers, 16-4x12-3; keel Sept30/20; launch Sept17/21; **deliver Dec31/21.**

Eurana, hull 264, bulk oil stock; 419-3 LBP; 56-3 beam; 25-9¼ loaded draft; 10¾ loaded speed; 9870 DWT; 3 cyl TE engs, 3000 SHP; 3 SE Scotch boilers, 15-10x11-4; keel Jan17/21; launch July16/21.

No name, hull 265, bulk oil stock; sister to above.

Saratoga, hull 199, battle cruiser USN; 874 LOA; 850 LBP; 105-5¼ extreme beam; 31 mean draft; 43,500 normal disp; 33¼ loaded speed; GE turbo-electric drive; 180,000 SHP; 16 WT boilers, 198,000 sq ft plus 18,000 superheat; keel Sept25/20.

Colorado, hull 200, battleship USN; 624 LOA; 600 LBP; 97-3½ beam waterline; 30-6 mean draft; 32,600 normal disp; 21 loaded speed; Westinghouse turbo-electric drive, 28,900 SHP; 8 B&W WT boilers, 41,678 sq ft plus 4169 superheat; keel Mar29/19; launch Mar22/21.

Washington, hull 201, battleship USN, sister to above; keel June30/19; launch Sept1/21.

Kamoi, hull 267, fuel ship Japanese Navy; 497-8 LOA; 67 beam; 28 designed draft; 15 loaded speed; 13,000 DWT; elec drive, 8000 SHP; 4 B&W boilers; keel Sept14/21.

### STATEN ISLAND SHIPBUILDING COMPANY, STATEN ISLAND, NEW YORK

Purchasing Agent: R. C. Miller.

Hell Gate, hull 728, dredge V. R. Browning; 140 LBP; 48 beam; 15 loaded draft; keel Aug28/20; launch Feb23/21.

### SUN SHIPBUILDING COMPANY, CHESTER, PENN.

Purchasing Agent: H. W. Scott.

Agwiscot, hull 42, tanker A. G. W. I. S. Co; 480 LBP; 65-9 beam; 26-7 loaded draft; 12 loaded speed; 12,500 DWT; single screw QE engs, 4300 IHP; 4 SE Scotch boilers, 15-10 x11-11¼; keel Dec23/20.

Agwistates, hull 43, tanker A. G. W. I. S. Co; sister to above; keel Jan3/21.

No name, hull 46, tanker Sun Oil Co; 480 LBP; 65-9 beam; 26-7 loaded draft; 10½ loaded speed; 12,800 DWT; single screw QE engs, 4300 IHP; 3 SE Scotch boilers, 15x11-11¾; keel not laid.

No name, hull 47, tanker Sun Oil Co; sister to above; keel not laid.

### TEXAS STEAMSHIP COMPANY, BATH, MAINE

Purchasing Agent: A. R. Weber.

New Jersey, hull 32, tanker Tex SS Co; 415-10 LBP; 56 beam; 25-7¾ loaded draft; 11½ loaded speed; 9600 DWT; TE engs, 3000 IHP; 3 Scotch boilers, 15-3x11; keel Nov 9/20; launch Nov19/21; **deliver Dec 20/21.**

## Repair Work

### BETHLEHEM SHIPBUILDING CORPORATION, LTD.

#### Potrero Works

Parts for turbine: Hoosier State. Drydocking, painting, miscellaneous repairs, new propellers, shaft, rudder and frame repairs: Harvard. Miscellaneous repairs, drydocking, painting: J. A. Moffett, Barge No. 93, Lyman Stewart, Tricolor, Babinda (also caulking sides and decks), Washington, West Notus, Ernest Meyer. Miscellaneous repairs: Cethana, Nanking, F. J. Luckenbach, Steel Seafarer, Waikawa, Ventura, Esther Dollar, Rose City, Saint Joseph, Hanna Nielson, F. H. Hillman, Mexico, West Henshaw, Boobyalla. Drydocking, new rudder: Buford. Engine, boiler, hull repairs, drydocking, painting: Frank H. Buck, Point Bonita, President, Admiral Sebree (also installing new propeller). Drydocking, painting and overhauling strainers: Hannawa. Engine, boiler, hull repairs: Matsonia (not boiler), Stanley Dollar, Cuba. New propeller: La Habra. Retubing and rebricking boilers: Hawkeye State. Rotor repairs: Katrina Luckenbach. New circulating pump casing: F. S. Loop. New thrust shoe: Senator. New tailshaft: Nehalem. Dismantling: Intrepid. Miscellaneous engine repairs: Parana, Wilhelmina, Brush. New piston rings: Montebello.

#### Alameda Works

Miscellaneous repairs, drydocking, painting: Athens, Barge No. 4, Port Angeles, Katherine, Rosalie Mahoney. Miscellaneous repairs: Elizabeth, El Segundo, S. O. Barge No. 95, D. G. Scofield. Making new rudder: Thomas Crowley. New propeller: Nome City.

### LOS ANGELES SHIPBUILDING & DRYDOCK COMPANY, SAN PEDRO

Extensive hull and machinery repairs: Wm. Donovan (also new propeller and repairs to bottom), Chihuahua, Yale (also docking, scaling, painting). Minor machinery repairs: H. T. Harper, Pacific, Catherine C. Sudden, Los Angeles, West Faralon, Centralia, Shabonee, Samson, Harvard, Cape Romain, Boobyalla. Engine repairs: Mabel L. (extensive), Grays Harbor (minor). Docking: Submarine F-2, H-2, McDermut 262, oil barge 30. Piping repairs: Quinault, Mexico. Minor repairs: Daisy Gadsby, Centralia, Harvard, Yeoman, Willpolo, Sierra. Docking, painting: San Pedro (also new tailshaft), Avalon (inspection), Vaquero (also minor hull repairs). Turbine repairs: Katrina Luckenbach, Parana. Unloading two 50-foot motor tugs for Pacific Fleet: U. S. S. Rappahannock. Boiler repairs: San Pedro.

**MOORE SHIPBUILDING COMPANY, OAKLAND**

Engine repairs: Oriental, Virginian, Colombia, Maui, Hoosier State, Mississippi, Ventura. Drydocking, cleaning, painting: West Katan, Annie Hanify, Manukai, Pyramid, Rainier, West Calera, Minnie A. Caine. Deck repairs: A. H. Payson (also hull), Arakan, Claremont. Drydocking, cleaning, painting, miscellaneous repairs: El Segundo, Crolona, Modoc, San Francisco, Sierra, Creole State, Santa Monica, Sherman, Seminole. Miscellaneous repairs: Hawkeye State. Voyage repairs: Venezuela.

**NAVY YARD, PUGET SOUND**

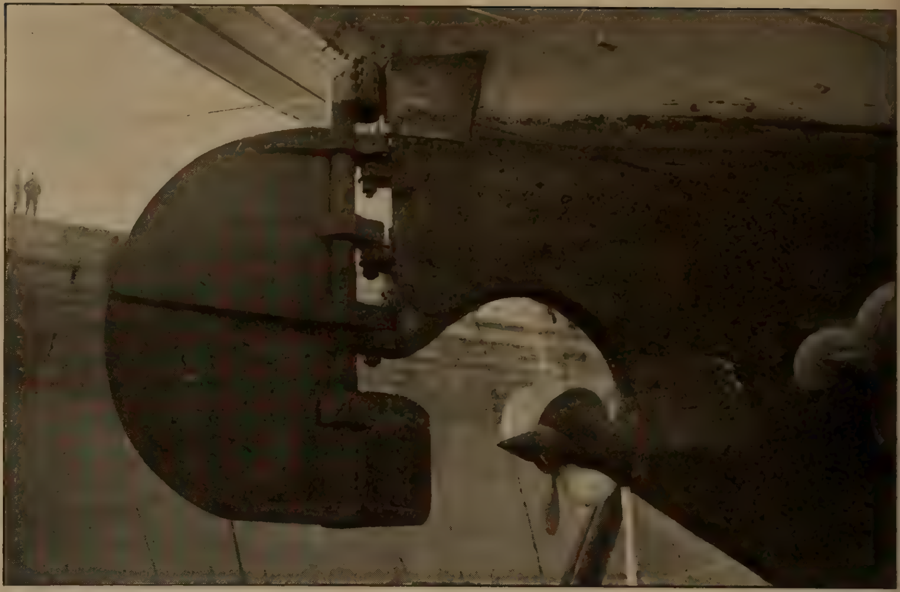
Docking and miscellaneous repairs: Tennessee, New York, Swallow, Challenge. Miscellaneous repairs: Laub, McLanahan, Evans, Buchanan, Aaron Ward, Zeilin, Wickes, Stoddert, Reno, Farquhar, Thompson, Paul Hamilton, Kennedy. Minor repairs: Quincy. Docking and minor repairs: Omaha, Coal barges Nos. 278, 304, 306, 321, 322, 157, 173; Ammunition lighters Nos. 3, 4; Fuel oil barge No. 4. Miscellaneous repairs incidental to operation as district craft: Eagle No. 57, Pawtucket, Sotoyomo, Mahopac, Tatnuck, Iroquois. Care and preservation: Oregon, Seattle, Missoula, Charlotte, S. C. No. 310.

**TODD DRY DOCKS, INC. SEATTLE**

Repairs to tank tops: Suwa Maru. Docking, cleaning: Utopia. Docking, cleaning, painting: Scow No. 33, Jeptha, Algonquin (also miscellaneous repairs). Docking: Westerly. Miscellaneous repairs: Solduc, Liebre, Protesilaus, Santa Cruz, Lovejoy. Engine repairs: Kitsap II, Queen. Docking for survey: Steel Worker. Repairs to deck and engine department: Red Hook. Miscellaneous betterments: Pine Tree State. Repairs to ice machine: Bay State. New bronze propeller wheel made: Admiral Rodman. Repairs to cargo winch: Pomona.

**YARROWS, LTD., VICTORIA, B. C.**

Docking, cleaning, painting, sundry repairs: Canadian Importer, Thiepval, Princess Adelaide, El Lobo, Mafalda, Prince Alice (repair propellers), Givenchy (stranding and submersion repairs), Amur (also changing propeller). Castings and minor repairs: Princess Royal. Engine room repairs: Charmer, Princess Louise, Princess Maquinna. Docking, cleaning, painting: Cascade, Princess Victoria, Margaret Coughlan. Making new C. I. propeller: E. D. Kingsley. Miscellaneous repairs: Princess Victoria, Mafalda, S. F. Tolmie (storm damage), Amur (stranded), several scows. Engine fittings: Princess Mary, Estevan.



Los Angeles Steamship Company's steamship Harvard in drydock of the Bethlehem Shipbuilding Corporation

# A Prompt Repair

THE Hunters Point Works of the Union Plant of the Bethlehem Shipbuilding Corporation made a record repair job during December on the Los Angeles Steamship Company's steamer Harvard when she came into San Francisco with a broken stern frame and a damaged propeller. Perhaps the story can best be told in the straightforward report of P. J. Cotton, superintendent of hull construction, which we give in full as follows:

On Thursday, December 15, 1921, the steamship Harvard came into port with one blade missing on her center wheel and stern frame fractured between nine- and ten-foot water line.

Ship was sent to Hunters Point dry dock and at 8:30 p. m. the dock was dry and ship ready for inspection. At 3 p. m. Friday, December 16, it was decided by the American Bureau and United States inspectors to fit a bronze casting over the crack extending up into the rudder trunk over the old stern frame and downward over the old frame about 36 inches and forward on each side of the vessel one frame space, making a casting weighing about 1½ tons. In order to fit this casting the rudder and upper stock had to be unshipped. This was done by 8 a. m. Saturday, December 17, and after erecting staging, etc., pattern makers started to make pattern at 10 a. m. Working continuously day and night the pattern was delivered to our brass foundry at 10:15 a. m. Sunday, December 18. On Monday morning early, December 19, the casting was poured and at 3:50 p. m., same day, casting was sent to ship machined and ready for installation. By 8 a. m. Tuesday morning, December 20, the casting was fitted to place and upper part extended into rudder trunk riveted complete and everything ready to reship rudder and rudder stock. At 3 p. m., same day, rudder and stock were in place, and machinists were connecting steering gear to same; and by 9:30 a. m. Wednesday, the 21st, ship was ready for undocking, making a total time from start to finish of four days and nineteen hours.

During this time the port and center wheels had been removed, shafts drawn and sent to shop to be checked and returned to ship and installed with two new propellers; also a new plate was fitted to balance rudder and extensive repairs made to port bilge keel.

Directly after this repair had been made the Harvard resumed her regular service and, although she was immediately confronted with two of the worst storms which the Pacific Coast has seen in years, it was found when she was recently docked for her regular annual overhaul that the repair as described above was standing up in perfect shape.

# Marine Insurance

CHARLES F. HOWELL, Eastern Contributing Editor

## Marine Results in 1921

In common with practically all branches of trade, the year 1921 was one of readjustment in marine underwriting. The profits, where there were any at all, were very slight. Full toll was taken of the underwriter in the unsettled conditions of foreign markets as reflected in our export and import trade, in the reduction of the values of commodities, and in the sinister development of the moral hazard when foreign buyers displayed an unwillingness to assume a loss sustained because of falling markets. War inflation has, for the past two years, caused heavy losses to marine underwriters, and throughout 1921 they have been regularly called upon to settle enormous cargo claims arising from shipments made in 1919 and 1920. Vessel owners have sought to recover damages from their insurers said to have been sustained a year or two back although the underwriters had never been advised of such damages, and this in the face of a heavy fall in tonnage values. From this source alone there was a constant drainage on the insurance chest throughout 1921, and against it stood a reduced premium volume because values had gone down and because so much tonnage was laid up through lack of trade.

It has not been possible to cut down the cost of conducting underwriting operations, although much thought is being given to this important question of overhead expenses. Another element that has entered seriously into the difficulties of the insurer is the activity of foreign competition. The British underwriter has suffered many of the same reverses as have his American brethren, but with his great advantage in world-wide spread of business he has been in position to cut away at the rates in a manner that would spell disaster to us on this side. It is generally felt here that the British underwriters are resolved upon capturing certain classes of American business no matter at what cost, and this has been expressed in their lower rates. All of the best American fleets have been secured by them, and they are bidding recklessly for several kinds of cargo. The result of such methods is to start the public clamoring for reduced rates all along the line. The new year has opened with little alteration in these disadvantageous conditions, and it draws deeply on one's optimism to see much change in the near future.

One of the most hopeful signs in American underwriting is the greatly improved spirit of co-operation. This has been displayed in the merger of the National Board of Marine Underwriters with the New York Board of Underwriters, as also in the solid front seen at Washington in support of the Loadline Bill, the Model Bill, and the proposed revision of the Harter Act. Eighteen months of operation by the American Marine Insurance Syndicates have met with gratifying results, and a neat profit is reasonably certain despite the loss to foreign competition of most of the best American fleets. Another evidence of co-operation is the organization of the United States Salvage Association. It is also gratifying to be able to record a marked falling off in theft and pilferage losses, and in leakage and breakage losses; this would indicate a return to normality. The public should bear in mind that during the war the marine rates were not advanced as respects indemnity against strictly marine perils, and that to demand such a reduction at this time is unfair because it would imperil even the small profit that remains to the underwriter.

## Rating Shipping Board Vessels

Perhaps no other subject has engaged more acrimonious attention of late than the charge that our marine underwriters are prejudiced against Shipping Board boats and have regularly discriminated against them by assessing higher rates. This is the view entertained by members of the Shipping Board, and they have not hesitated to rattle the saber to a threat of government invasion of the business. A number of prominent underwriters have frankly denied any such prejudice and have pointed to what they have actually done as merely the application of underwriting sense to the problem. Why should Shipping Board vessels have a preferential rate simply because they are such? It is the human equation that, in the final analysis, fixes the rates. The experience of an underwriter with this or that steamship line determines his quotation, and if that quotation is favorable it is because he knows, from actual experience extending over a term of years, that claims will not come to any undesirable extent from that source. The reason the claims do not occur is because the old-time operators know their business, hire competent crews and work vessels with a maximum of safety. It will take time to get our untried American vessels and operators in such a class; but as soon as they can show as favorable a record as their foreign competitors they will get as low rates as the latter and even lower. It will not be because those boats fly the American flag, but because it is a sound business proposition.

## Model Bill Passes Senate

With no objection and without the formality of a roll call, the Model Marine Insurance Bill has passed the United States Senate. There is every reason to anticipate similar success with the House measure, the so-called Edmonds Bill. This measure is designed for employment in the District of Columbia, but more especially as a model for legislative emulation in the several states. Among the fundamental changes sought by the bill are the following:

Substitution of a system of net profits taxation instead of taxing gross premiums.

Establishment of the multiple insurance principle, so that American marine insurance companies may be allowed to transact all kinds of insurance other than life, surety and bonding.

Enlargement of reinsurance facilities to permit direct writing companies to exchange business with other companies, if meeting proper standards of solvency, so freely as to make the reinsurance automatic and practically national in scope.

Removal of existing limitations on the financial powers of companies which hamper operations in foreign fields by permitting credit for deposits made in other countries over the legal reserve liability as an asset in the company's home statement.

## Storage Ship Losses

In the closing hours of 1921 Buffalo sustained one of the worst storms in its history, and as a result of it no less than twenty vessels, in use as winter storehouses for grain, were driven ashore, with a heavy bill of damages for Lake grain underwriters to settle. It is rare that the insurers lose on their winter storage business, as the moorings are so arranged as to be proof against any but the most severe storms. Inspectors have been sent to Buffalo to examine into the condition of the stranded vessels. Should it develop that the hulls have been damaged the underwriting loss will be heavy; the cargoes will have to be discharged in order that repairs may be effected, and the grain will have to be reconditioned.

## Cotton and Rosin Stowage

Shippers will be interested in the

FIREMAN'S FUND
Insures Hulls, Cargoes,
HEAD OFFICE: CALIFORNIA AND SANSOME
JOSEPH HADLEY, European Agent
3 LOTHBURY, E. C.
LONDON
E. A. VALENTINE, Special Agent
714-715 BOARD OF TRADE BUILDING
PORTLAND, ORE.
FRANK G. TAYLOR, GENERAL AGENT FOR WASHINGTON, OREGON, ALASKA

following rules recently promulgated by the Board of Underwriters of New York for the stowage of cotton and rosin and cotton and turpentine:

COTTON AND ROSIN

These two commodities should be carried in separate holds whenever it is practicable to carry out such stowage. Cotton may also be carried in the lower hold and rosin in the 'tween deck, it being understood that the 'tween-deck hatches are to be securely battened down. If it is not practicable to stow as above, then the stowage should be left to the judgment of the surveyor of the board, he to see to it that if cotton is carried over rosin in the same hold, the necessary precaution will be taken to completely cover the rosin with a tight floor of two-inch boards before the cotton is stowed over the rosin.

COTTON AND TURPENTINE

Cotton and turpentine must never be carried in the same hold or compartment. Wherever practicable these two commodities should be stowed in holds separated by two iron or steel bulkheads or engine room space. If this is not practicable then the cotton must be separated from the turpentine by one iron or steel bulkhead. Whenever cotton and rosin, and cotton and turpentine are carried in a vessel loading under the inspection of a board surveyor, he is to state in his certificate just how these commodities are stowed.

## Marine Syndicate Appointments

Lawrence J. Brengle has been selected to succeed Charles R. Page, the retiring manager of the United States Salvage Association, which was the former Syndicate A, and John H. Trowbridge becomes assistant manager. Gomer H. Rees has resigned as secretary and a director of the association to engage in the brokerage business. Mr. Brengle has been the underwriter of Syndicates B and C, in which capacity he will continue while supervising the operations of the Salvage Association. He has had an extensive experience on both the Pacific and Atlantic coasts, particularly in the handling of wrecked and damaged vessels. The greater part of his career has been with Johnson & Higgins; more recently he was with the New York office of the Insurance Company of North America.

C. F. H.

## A Poor Year

Pacific Coast marine underwriters generally had an unhappy experience during 1921. Although detailed reports of business are not yet available, one underwriter who had sounded the market expressed the opinion that few companies made money; for the majority, he believed, the loss ratio would be from 80 to 100 per cent and the addition of overhead expenses would increase the total loss to more than 100. When well-managed, old-line companies are able to do no better than this, the situation of the more reckless may be imagined better than described.

### Several Heavy Losses

For this unsatisfactory state of things there are several causes. In the first place, business was poor and premium incomes small, while overhead went on as usual; rates broke under vigorous competition for what business did offer; but the weightiest factor was the succession of heavy losses such as the Governor and Tokuyo Maru, the latter of which was extremely costly from the cargo standpoint.

Perhaps 1922 may show some improvement. Nothing large has developed to warrant this view, although small business does appear to be on the mend again. Surplus production of such products as salmon and dried fruits practically has been cleaned up at last, with the result that more shipments should be discernible during the coming autumn. On the other hand, there is a general belief that recovery will be slow and that the gentlemen who fix specific dates for complete resumption of domestic and export business are making themselves ridiculous.

### Lumber Rates Down

Lumber for the Orient, which has been the mainstay of Pacific Coast underwriters and shipping operators for several months, is not moving so freely these days, perhaps on account of a normal midwinter lull in Japan, but perhaps because Nippon's needs have been largely filled. As to which explanation is correct the next few weeks should bear witness; but some underwriters do not appear to care whether exports are resumed. To those individuals rates have fallen entirely too low for comfort. One underwriter gave the following approximate figures to show the present state of affairs, the first column rates under-deck cargoes and the second deck:

| | Under-deck | Deck |
|---|---|---|
| Honolulu, sail— | | |
| Normal | ¾ | 2 |
| January | 60 | 1¼ |
| Coastwise, stm. schr.— | | |
| Normal | ⅜ | 1 |

January, ranging from 1/3 to 3/8 and 55 for both deck and under-deck cargoes, as there is a tendency to equalize things by striking an average.

| | | |
|---|---|---|
| Offshore, steam— | | |
| Normal | 30 | 60 |
| January | ¼ | ½ |

The last figures, on offshore steam cargoes, would not be acquiesced in by others. Six or eight months ago, said a second underwriter, 40 cents was the prevailing rate for Puget Sound, with 5 cents added for Grays Harbor on account of the shallow water of that port; then came 3/8, 1/3, 30 and at length 1/4, with various companies declining to write business, as rates dropped to levels that they regarded as unprofitable. In any event, there is little difficulty in demonstrating that the principal offshore cargo of the year has yielded low revenues.

INSURANCE COMPANY
Freights and Disbursements
STREETS, SAN FRANCISCO, CALIFORNIA

W. H. WOODRUFF, Special Agent
LOS ANGELES
230 BYRNE BUILDING

F. H. & C. R. OSBORN, Managers
ATLANTIC MARINE DEPARTMENT
72 BEAVER STREET NEW YORK

AND BRITISH COLUMBIA, 309 COLMAN BUILDING, SEATTLE, WASHINGTON

*Summary of marine casualties occurring to vessels of the United States during the fiscal year ended June 30, 1921.*

[Collected and compiled in accordance with acts of June 20, 1874, and June 18, 1878.]

| | Nubmer of vessels involved. | Tonnage. | Vessels totally lost. | Tonnage. | Value of property involved. | | Value of property lost. | | Persons on board. | | Lives lost. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Vessels. | Cargoes. | Vessels. | Cargoes. | Passengers. | Crews. | Passengers. | Crews. |
| ATLANTIC AND GULF COASTS. | | | | | | | | | | | | |
| Founderings | 15 | 5,104 | 12 | 4,751 | $873,000 | $201,560 | $826,000 | $187,600 | ........ | 139 | ........ | 2 |
| Strandings | 78 | 150,504 | 25 | 10,260 | 33,932,570 | 6,574,586 | 2,205,055 | 542,747 | 844 | 1,745 | ........ | 11 |
| Collisions | 88 | 154,512 | 11 | 6,269 | 27,742,925 | 3,488,815 | 1,542,972 | 160,115 | 1,133 | 1,810 | ........ | 9 |
| Other causes | 90 | 95,476 | 27 | 7,784 | 22,303,075 | 5,608,695 | 2,247,170 | 160,985 | 712 | 1,414 | ........ | 33 |
| Total | 271 | 405,596 | 75 | 29,064 | 84,851,570 | 15,873,656 | 6,821,197 | 1,051,447 | 2,689 | 5,108 | ........ | 55 |
| Aggregate | ........ | ........ | ........ | ........ | 100,725,226 | | 7,872,744 | | 7,797 | | 55 | |
| PACIFIC COAST. | | | | | | | | | | | | |
| Founderings | 3 | 406 | 3 | 406 | 32,925 | 9,200 | 32,925 | ........ | ........ | 4 | ........ | ........ |
| Strandings | 37 | 27,319 | 12 | 3,814 | 5,200,500 | 1,436,630 | 1,180,762 | 247,605 | 25 | 416 | ........ | 2 |
| Collisions | 25 | 49,961 | 3 | 5,494 | 10,692,490 | 1,994,550 | 2,232,050 | 241,035 | 2,001 | 593 | 6 | 3 |
| Other causes | 39 | 32,569 | 17 | 640 | 6,024,700 | 994,860 | 238,793 | 12,971 | 703 | 520 | ........ | 11 |
| Total | 104 | 110,255 | 35 | 10,354 | 21,950,615 | 4,435,240 | 3,684,530 | 501,611 | 2,729 | 1,533 | 6 | 16 |
| Aggregate | ........ | ........ | ........ | ........ | 26,385,855 | | 4,186,141 | | 4,262 | | 22 | |
| GREAT LAKES. | | | | | | | | | | | | |
| Founderings | 5 | 1,814 | 5 | 1,814 | 37,650 | 25,000 | 37,650 | 25,000 | ........ | 16 | ........ | ........ |
| Strandings | 47 | 221,879 | 4 | 5,528 | 16,831,200 | 2,109,105 | 896,016 | 42,825 | 24 | 1,302 | ........ | ........ |
| Collisions | 39 | 159,860 | 2 | 5,503 | 11,752,000 | 1,120,400 | 426,200 | 36,800 | 41 | 1,019 | ........ | 29 |
| Other causes | 53 | 155,564 | 5 | 451 | 13,759,646 | 1,655,950 | 334,415 | 29,400 | 509 | 1,461 | ........ | 15 |
| Total | 144 | 539,117 | 16 | 13,296 | 42,380,496 | 4,910,455 | 1,694,281 | 134,025 | 574 | 3,798 | ........ | 44 |
| Aggregate | ........ | ........ | ........ | ........ | 47,290,951 | | 1,828,306 | | 4,372 | | 44 | |
| RIVERS OF THE UNITED STATES. | | | | | | | | | | | | |
| Founderings | 10 | 582 | 9 | 544 | 96,900 | 4,815 | 95,900 | 4,815 | ........ | 53 | ........ | 1 |
| Strandings | 8 | 36,007 | ........ | ........ | 7,180,000 | 915,000 | 145,800 | 5,000 | 8 | 260 | ........ | ........ |
| Collisions | 21 | 44,332 | 2 | 49 | 6,799,500 | 827,750 | 324,300 | 1,000 | 239 | 388 | ........ | ........ |
| Other causes | 56 | 23,797 | 24 | 7,156 | 3,914,950 | 573,580 | 2,086,005 | 81,100 | 290 | 727 | 1 | 9 |
| Total | 95 | 104,718 | 35 | 7,749 | 17,991,350 | 2,321,145 | 2,652,005 | 91,915 | 537 | 1,428 | 1 | 10 |
| Aggregate | ........ | ........ | ........ | ........ | 20,312,495 | | 2,743,920 | | 1,965 | | 11 | |
| AT SEA AND IN FOREIGN WATERS. | | | | | | | | | | | | |
| Founderings | 20 | 22,883 | 20 | 22,883 | 3,688,000 | 837,460 | 3,688,000 | 837,460 | ........ | 230 | ........ | 49 |
| Strandings | 62 | 135,495 | 22 | 18,495 | 25,613,590 | 6,342,196 | 4,129,925 | 447,740 | 155 | 1,582 | ........ | ........ |
| Collisions | 16 | 54,277 | 1 | 753 | 11,361,100 | 2,782,300 | 267,500 | 35,000 | 97 | 469 | ........ | ........ |
| Other causes | 65 | 184,944 | 18 | 19,803 | 31,166,005 | 17,909,579 | 5,725,295 | 3,170,100 | 300 | 1,857 | ........ | 25 |
| Total | 163 | 397,599 | 61 | 61,934 | 71,828,695 | 27,871,535 | 13,810,720 | 4,490,300 | 552 | 4,138 | ........ | 74 |
| Aggregate | ........ | ........ | ........ | ........ | 99,700,230 | | 18,301,020 | | 4,690 | | 74 | |
| Grand total | 777 | 1,557,285 | 222 | 122,397 | 239,002,726 | 55,412,031 | 28,662,733 | 6,269,298 | 7,081 | 16,005 | 7 | 199 |
| Grand aggregate | ........ | ........ | ........ | ........ | 294,414,757 | | 34,932,031 | | 23,086 | | 206 | |
| SUMMARY BY NATURE OF CASUALTY. | | | | | | | | | | | | |
| Founderings | 53 | 30,789 | 49 | 30,398 | 4,728,475 | 1,078,035 | 4,680,475 | 1,054,875 | ........ | 442 | ........ | 52 |
| Strandings | 232 | 571,204 | 63 | 38,097 | 88,757,860 | 17,377,517 | 8,557,558 | 1,285,917 | 1,056 | 5,305 | ........ | 13 |
| Collisions | 189 | 462,942 | 19 | 18,068 | 68,348,015 | 10,213,815 | 4,793,022 | 473,950 | 3,511 | 4,279 | 6 | 41 |
| Other causes | 303 | 492,350 | 91 | 35,834 | 77,168,376 | 26,742,664 | 10,631,678 | 3,454,556 | 2,514 | 5,979 | 1 | 93 |
| Total | 777 | 1,557,285 | 222 | 122,397 | 239,002,726 | 55,412,031 | 28,662,733 | 6,269,298 | 7,081 | 16,005 | 7 | 199 |
| Aggregate | ........ | ........ | ........ | ........ | 294,414,757 | | 34,932,031 | | 23,086 | | 206 | |

NOTE.—Three vessels met with casualty in the Panama Canal Zone. Their combined tonnage was 14,969; value of property involved, $3,662,345; loss, $30,165; members of crews, 98.

In this summary of marine casualties for the fiscal year ending June 30, 1921, taken from the annual report of the commandant, Coast Guard Service, disasters involving damage or loss of less than $300 are omitted, except that all collisions involving an aggregate of $300 damage to both vessels are included.

## American Surveyor for Japan

An agreement has been reached by Captain W. I. Eisler, Shanghai representative of the American Bureau of Shipping, and officials of the Japanese Marine Corporation for the appointment of an American surveyor to "take the lead in the survey of all American vessels in Japanese ports, to be associated in such surveys with a Japanese colleague," says the Japan Advertiser. "This removes the cause of difficulties hitherto experienced which have prevented up to this time the smooth working of the quadruple alliance.

### A British Adviser

"Mr. Fred F. Perris, for more than twenty-five years a surveyor in England to the British corporation, has been acting in Japan as British adviser to the new partner, and under his direction not only has the Japanese staff been developed but more than 100,000 tons of shipping has been added to the Japanese registry.

"Difficulties, however, have been experienced in introducing reciprocal working arrangements as between the United States and Japan. Captain Eisler's visit to Japan was projected to deal with these difficulties. He has represented the American Bureau in Shanghai for many years and he also has friendly ties with Japanese shipping interests through his former service with the Nippon Yusen Kaisha. He holds a Japanese decoration for service in the Japanese transport service in the war with China.

### Agreement Is Made

"Conferences between Captain Eisler and the committee of the Japanese corporation, with Mr. Perris as an interested third party representing the parent British Corporation, have now resulted in the agreement providing for the attachment of an American surveyor to the Japanese staff, which is expected to do away with the difficulties hitherto encountered. The parties interested agree that this will provide a safe and mutually agreeable way for putting the reciprocal advantages of the quadruple alliance into operation.

"The Japanese Corporation includes in its directorate some of the most influential shipping men in Japan. Its honorary president is Prince Higashi Fushimi. The directors include Mr. Y. Ito, president of the N. Y. K.; Mr. M. Yukawa, director of the N. Y. K.; Dr. S. Terano, professor of the College of Engineering of the Imperial University of Tokyo; Mr. K. Kagami, managing director of the Tokyo Marine & Fire Insurance Company; Mr. K. Kato, president of the Fuso Marine Insurance Company; Mr. R. Kafuku, managing director of the O. S. K.; Dr. J. Imaoka, managing director of the Uraga Dock Company; Mr. T. Shiota, managing director of the Mitsubishi Shipbuilding Company."

## They Elect; They Dine

The Association of Marine Underwriters, San Francisco, held its annual meeting January 27 and elected officers as follows: president, G. Kirkham Smith; vice-president, S. A. Livingston; secretary-treasurer, Harry Stoddard; executive committee, Wilfred Page, G. L. West and Clayton Roberts. The following new members walked the plank: Farnham P. Griffiths, H. S. Alston, G. W. Cortelyou, Edwin Sutehall, William J. Shackelford, H. W. Hauser. The association held its annual dinner the evening of January 27.

## Use of Wireless

On June 30, 1921, there were 2978 American vessels equipped with radio, as compared with 2808 at the end of the preceding fiscal year. These figures, which are taken from the annual report of the commissioner of navigation, indicate that practically all steel steamers exceeding 500 gross tons, of which there were 2917 on the oceans and Great Lakes June 30, have been equipped with wireless apparatus. There were, on the same date, thirty wood passenger steamers, some of which probably were equipped, and 492 wood freight steamers, most of which probably were without. In any event, it appears that most ocean-going and Lake steamers of American registry have wireless.

# Rates and Freights

## Those Atlantic Pirates

A continued disorganization of North Atlantic-Far East rates, coupled with a disinclination of Pacific lines to make additional reductions, is having a demoralizing effect upon the export of commodities, other than those originating in the West, from Pacific Coast ports. The demoralization is not, of course, new, for it dates back to August, 1920, when the old parity between the Atlantic and Pacific was destroyed by the general advances of railroad rates; but conditions are becoming generally worse, and the efforts of Western railroads to command business by the publication of reduced import and export rates are not in the main successful. This failure may be traced to two causes: the slow and relatively clumsy system employed by the railroads in reducing rates, for by the time they succeed in obtaining general concurrence and submitting the new tariff to the Interstate Commerce Commission some North Atlantic steamship line has nullified their efforts by another cut in ocean rates, with the result that the transcontinental railroads are in the unenviable situation of a turtle chasing a hare; the other cause is the reluctance of trans-Pacific steamship lines to follow their Atlantic brethren down the scale. Due to great withdrawals of tonnage during the last year and to a heavy demand from the Orient for local products, especially lumber, vessels sailing from Washington, Oregon and California have been in fairly strong positions and did not feel an impelling need of overland business. But exports of Pacific origin are decidedly slacker than they were a few months ago, and perhaps steamship lines will manifest greater interest in transcontinental freight.

### Steel Down to 50 Cents

Although the import and export rates agreed upon by the Western lines in October still await concurrence of Central and Southeastern railroads, the steel rate from Chicago has been reduced to 50 cents, from Midvale to 30 cents and from Minnequa to 38½. Inasmuch as the trans-Pacific rate stands at $5 a short ton, the total charge, Chicago to the Far East, is $15, or considerably more than the combined rail and water rate from Pittsburgh to the Orient via North Atlantic ports; $5.70 Pittsburgh to tidewater, plus $8 a long ton ($7.14 a short ton), the total being $12.84. The North Atlantic rate of $8, it may be remarked in passing, is by no means the lowest that has been quoted; but even it is sufficiently low to force the movement of steel from Pittsburgh instead of Chicago.

### A Low Oil Rate

One railroad traffic manager gave it as his opinion that trans-Pacific steamship lines should be able to make a lower rate than $5 on steel. When Panama Canal tolls, which average about 80 cents to the ton of cargo, are deducted, the net of North Atlantic lines remains $6.34, or considerably less a ton-mile than Pacific-Orient steamships are receiving even at $5 a ton. Nevertheless, the same individual characterized the North Atlantic situation as chaotic and saw in the reckless rate-cutting now in progress an intention on the part of the stronger companies to force some one out of business. For example, said he, an important American oil company closed a year's exports of lubricants from New York to Calcutta at $4.32 a ton, presumably a ton of 2240 pounds, and had an open rate to Japan of $5.65. These quotations probably are by steamship lines plying via Suez, inasmuch as the Japan rate, which by a Panama vessel should be lower than that of Calcutta, is higher. Such rates as these indicate clearly that stability in all North Atlantic-Far East trades is far in the offing; and the conclusion is fortified by a recent reduction in the New-York-Australian pulp-board rate of $5 a ton, which was made when plans for diverting traffic via Pacific Coast ports were on the verge of success. The cut was the more remarkable because of its recklessness, for a reduction of much less than $5 would have been quite ample.

### Shoe on Other Foot

Shippers are not above playing Atlantic against Pacific and railroad against steamship. The man with freight to dispatch finds everything decidedly to his liking. Perhaps some rude justice is discernible here: six years ago the shipper was begging for space and was paying through the nose for what the shipowner granted him. And indications are that the era of low rates will be at least as long as the era of high rates, and probably much longer.

## A New Cotton Rate

Whether publication of a reduced export rate on cotton will have any appreciable effect in diverting shipments to the Pacific Coast from the Gulf remains in question. If North Atlantic steamship lines find it possible to nullify practically all railroad reductions there is little reason why Gulf companies should be less successful. Everyone must consider the fact that a railroad rate of any consequence is likely to prove an insuperable handicap to Pacific steamship lines in bidding for overland business.

At any rate, the Interstate Commerce Commission, after suspending a proposed export rate of $1.35, somewhat unexpectedly permitted it to become effective January 1; but tempered justice with mercy (or did the contrary) by permitting a 10 per cent reduction to be made on cotton moving from producing centers to Galveston, so that the Pacific Coast has not overcome all of the handicap under which it labored. Besides, few can doubt that the Gulf lines are ready to make still lower ocean rates to the Far East. If they should the futility of adjusting rail rates in the absence of stability in ocean rates will become even more apparent than it is today.

### Recent Fluctuations

A brief history of cotton-rate fluctuations will serve to make clear the whole general tendency of the struggle between direct steamship lines on the one hand and transcontinental railroads and Pacific operators on the other. On January 1, 1920, when ocean rates had not begun their disastrous decline, Gulf and Pacific tariffs alike called for $33 a ton, but rail-rate differentials left the Gulf an advantage of $10.90. This was increased to $18.90 on January 11, when the Gulf steamships cut the rate to $25. The trouble began, it should be noted, where it always does, that is to say, in the action of rate-cutting steamers. On August 1, 1920, the Gulf ocean rate increased to $29 and the Pacific to $35, the net effect being a reduction of $2 in the advantage of the Gulf. Ocean tariffs had risen again by October 11, which found the Gulf quoting $30 and the Pacific $35; but in the meantime rail rates had increased 20 per cent, and through rates via the Gulf were $49 and via San Francisco $65, as against $47.10 and $58 January 1. The Pacific lines made a radical cut of $20 at the beginning of 1921, and January 11 saw the closest approach to a parity, the advantage of the Gulf being only $1. The Gulf ocean rate, however, was $25 as against the Pacific's $15, and the through rates $44 and $45; in other words, trans-Pacific operators had found the rail rates a great handicap and were compelled to cut their own tariffs. By February 15, 1921, the Gulf lines had reduced their rate to $20, and, as the Pacific stood firm at $15, the Gulf's favorable differential was $6.

In all these quotations the standard density rate has been taken, the high density rate being 15 cents to 25 cents a hundred pounds lower. By March 13, however, the Pacific lines had made a uniform tariff of $7 on both packs, thereby cutting the through rates to $37 as against the Gulf's total of $34; and by April 19 an increase of $3 in the Gulf rate equalized Gulf and Pacific for the first time. The Gulf destroyed this parity with a reduction of $4, so that June 7 found the Pacific under a disadvantage of $4; this was reduced to $3 by September 23, however, as a result of a Gulf increase from $14 to $15.

Throughout all these fluctuations, one should bear in mind, the only rail-rate changes were those of August, 1920. For all other movements of through rates steamship lines were altogether responsible.

When the Pacific Westbound Conference first attempted to obtain a share of the cotton export business, it suggested a differential under the Gulf lines of 54½ cents, this figure being obtained by subtracting the rail rate from Texas common points to Galveston from the rate to Pacific ports. This differential, it was believed, would permit a portion of the cotton produced from 210 to 500 miles inland to move via the Pacific Coast. The Galveston steamship lines, however, stood out for a 35-cent differential; and the Shipping Board settled the argument, so far as its own operators were concerned, by imposing a differential of 40 cents. This did not satisfy foreign interests and in September, 1920, all Gulf and Pacific lines agreed on a 50-cent differential, to which Pacific lines adhered until the Gulf reduction of June, 1921, would have forced the Pacific lines below $7, the lowest rate they felt able to make. As a result, the Pacific was helpless, and cotton moved via the Gulf. This was decidedly important, because exports to Japan increased enormously as compared with the low ebb of the year 1920, with the result that 1921 witnessed an unprecedented business. In that year Japan took about 550,000,000 pounds as against a former record of 441,000,000 made in 1919.

## A Mild Disorganization

A tendency of intercoastal steamship rates to disassociate themselves from transcontinental railroad rates, which began to appear in 1920, is gaining force of late as Panama Canal competition becomes more severe. Instead of water tariffs being based directly on those on the railroads, with sufficient reductions made to lure the shipper away from the rail lines, as was the custom only two years ago, rates are breaking to levels at which there is little enough relation to railroad schedules, except that the latter remain the maximum charges that a steamship company could demand. That this tendency was in evidence, although in a latent form, has been stated in these pages more than once; but the early maturing of the trend does occasion some surprise. One immediate and important effect will be to make the situation of the transcontinental railroads worse; and a concomitant doubtless will be the bringing to a head of movements looking toward placing Panama Canal lines under either the Shipping Board or Interstate Commerce Commission. Should the latter agitation bear fruit the present pressure on both rail and conference steamship lines would be eased immediately.

Rate-cutting by non-conference lines is reported almost daily. The I. S. C. has made a 40-cent rate on canned goods moving to the Atlantic, a reduction of 10 cents; the Isthmian Line has accepted zinc at 30 cents, as compared with the conference rate of 40 cents, which resulted in a cut to 30 cents by the conference on January 25; and an independent chartered vessel has cut the rate on cast-iron pipe from the Gulf to $7.50. The Isthmian reduction probably should not occasion a great deal of surprise, for the conference rate of $8 a ton admittedly was too high; but it was made at a time when Anaconda was shipping by way of the Northern railways and the Great Lakes and there was little prospect of diverting shipments to the Pacific Coast. Now, however, since the Lakes are closed to traffic, zinc has begun to move west as a result of the recent reduction; which gives a combined charge approximately equal to that of the Northern railway-Great Lakes route. The I. S. C. reduction is sufficient to create trouble; not so much can be said of the $7.50 rate on cast pipe, for this charge, in the opinion of some conference operators, is too low and might result in an actual operating loss. None of the cuts, however, is so important intrinsically as it is theoretically; the true significance of all is seen when they are considered as showing the effect of non-conference competition.

### Two Possible Remedies

The upshot of the present entanglement is that intercoastal shipping, which used to make merry over the predicaments of offshore carriers, is discovering that it is not immune from the disease of falling rates. It has, however, more than one remedy at hand, whereas overseas operators have had to see their market go from bad to worse, with the one medicine, increased cargo, impossible to obtain. In addition to working for the passage of a law that would place Panama Canal lines under some regulatory body, having power to prescribe minimum rates, the old-established intercoastal companies might be able to bring vigorous pressure to bear on their own account.

Such pressure would be marked reductions on low-class commodities such as iron and steel, bulky chemicals, etc. Due to relatively slower and less frequent service, the smaller companies, which in general have been the rate-cutters, have found in the bulky commodities their chief hope of cargo and have seen higher-class goods go to larger and faster steamships. These latter freights, in turn, are the very sorts that can afford to pay disproportionately high rates, in some cases as high as $80 a ton as against such a rate as $7.50 for cast-iron pipe. That may be made clearer by citing the evident fact that any freight rate within reason should be reflected little or not at all in the retail prices of such goods as men's clothing or shoes (although retailers have been known to plead freight rates as excuses for high prices); whereas a few cents a hundred pounds might make or break the market for less valuable merchandise. If, therefore, the stronger steamship companies were to reduce their rates on low-grade commodities to a level just above the cost of handling, they might be able to drive weaker lines entirely from the Panama trade, for the little fellows would have difficulty in commanding package goods, which would become the only profitable sort. At the same time the express lines would be in better shape than if they made radical reductions on all commodities, some of which, as indicated, they would get in any case so long as as their rates were less than those of the transcontinental railroads.

In this suggestion, which is advanced by a traffic manager, emphasis should be placed on the fact that "cost of handling" and not "cost of transportation" is regarded as the standard of the minimum rate; in other words, a steamship line would not have to worry greatly as to whether the transportation of a ton of steel from Baltimore to Seattle returned a "profit" so long as that ton of steel brought in a return in excess of handling costs of $3.50 or so a ton. The steel could be regarded, and properly, merely as ballast to offset lighter package goods.

### Another Possibility

Reports come from Washington to the effect that the Shipping Board believes that it has power to force publication and observance of minimum rates pending passage of a new act. The board is empowered to supervise practices, maximum rates, etc., and to adjust unfair or unreasonable tariffs and customs, and, although the object of the law is apparently to result in fair maxima, the language summarized above might be construed to permit supervision of minima as well. Nevertheless, the board might find itself with a fight on its hands if it made the attempt. The fact is, moreover, that the fixing of maximum rates has been a joke, for in some cases tariffs twice those of the railroads have been filed. No one foresaw the tendency of intercoastal shipping and its destructive effect on the transcontinental railroads, of course, but inasmuch as the situation is unparalleled there is no good reason why antiquated weapons should be employed.

In the meantime the railroads must sit by and see millions of tons of cargo going to their competitors. The following table shows the tons of cargo transported from the Atlantic to the Pacific and from the Pacific to the Atlantic in intercoastal trade during the first eleven months of 1921:

| | Atlantic-Pacific | Pacific-Atlantic |
|---|---|---|
| January | 76,593 | 81,336 |
| February | 67,302 | 68,345 |
| March | 55,111 | 52,289 |
| April | 94,484 | 59,306 |
| May | 90,617 | 93,242 |
| June | 68,809 | 57,234 |
| July | 60,997 | 91,991 |
| August | 55,387 | 129,792 |
| September | 72,620 | 104,642 |
| October | 86,442 | 105,951 |
| November | 91,067 | 101,460 |

This volume of freight is greatly important, perhaps essential, to the proper operation of transcontinental railroads. Without exception every rail line, whether Northern or Southern, passes through sparsely settled country, in which little or no freight originates. The result is that Western railroads feel the effect of the Panama Canal much more keenly than do Eastern carriers, which have a vast volume of local freight and which, besides, continue to do a good business in transporting goods to and from tidewater.

## Mr. Mann's Views

Seth Mann, attorney and manager of the traffic bureau, San Francisco Chamber of Commerce, summarizes the railroads' petition for relief from the Fourth Section in San Francisco Business as follows:

Having returned from hearings held in Chicago, Spokane and Portland on the application of the railroads for restoration by the Interstate Commerce Commission of terminal rates in westbound traffic, I have been asked to describe the issues involved in these hearings and the especial interest they have for business men of San Francisco and other Pacific Coast cities. Restoration of these terminal rates will mean millions in rate reductions on many manufactured commodities consumed on the Pacific Coast — how much it is impossible to estimate.

### Commodities Affected

The hearings before Examiner Disque for the Interstate Commerce Commission on the application of the railroads for relief from the Fourth Section on a number of commodities westbound were commenced at Chicago on November 17. The carriers are asking the commission to permit them to make rates on these westbound commodities to the Pacific Coast terminals which will hold some of the traffic now moving by water to the rail lines. The following commodities are embraced in this westbound application:

Paints; rails and fastenings, railway supplies; sewing machines; soap and washing compounds; caustic soda; saleratus soda; twine and cordage; wire and wire goods; crude cyanide; baking powder; lime phosphate, soda, etc.; cooling room material; refrigerators; glass and glassware; heating and cooking apparatus; stove pipe; leather; packinghouse products; rosin; starch; tires, rubber; turpentine; canned goods; carpet, linoleum, etc.; drugs, medicines, chemicals, etc.; dry goods, etc.; iron and steel articles; pianos; chewing gum; hollowware and stove furniture.

### Canal Competition Grows

The competition through the Panama Canal is keener and more effective at the present time than it ever has been. Forty-nine ships were shown to be operating through the canal in 1915, when the commission made its last order granting relief from the Fourth Section, while at the present time there are 76 vessels engaged in this intercoastal business, and the rail carriers have lost nearly all of the westbound traffic on the commodities named in their application, to the water. They wish to regain some of it by making rates to the water terminals of the Pacific Coast that will move some of the traffic as against the competition of the ships. The westbound application of the carriers asks the permission of the commission to apply to the Pacific Coast ports rates lower than the rates in effect to points in intermountain territory, which is not served by the water carriers. Points back from the coast, such as Sacramento, Stockton and Fresno, will enjoy lower rates than the rates to the intermountain points, for their rates will be based upon the combination on the coast; or, in other words, the terminal rate plus the local rate back from the coast. Where this combination rate makes less than the existing through rate, these interior points will have the benefit of that combination.

### Westbound Business Needed

At Chicago Mr. Edward Chambers, vice-president in charge of traffic of the Atchison, Topeka & Santa Fe Railway, testified upon the general situation, gave a brief resume of the history of intercoastal water competition, and showed that the carriers will lose a large part or all of this westbound business unless they are allowed to make rates competitive with the water rates which will hold some of the business to the rails. He was followed by Mr. Paul P. Hastings, of the transcontinental freight committee, who presented statistics concerning the number of ships presently engaged in intercoastal business and the tonnage carried by them. A number of merchant witnesses were heard who corroborated the situation presented by the rail carriers.

After arguing in Washington some transportation matters set for hearing in the latter part of November, I returned West by way of Spokane and Portland. Hearings were set at Spokane on December 1, Portland on December 5, and San Francisco on December 8.

### Intermountain Attitude Unchanged

The position of the intermountain cities is the same as it always has been in these Fourth Section cases, which have been on hearing before the commission from time to time during the last thirty years. They take the rates proposed to the coast and then show how much they would pay if applied at the intermountain points on a car-mile basis and a ton-mile basis, and seek to maintain that whatever rates are made to the coast should apply at the intermountain points, as rates reasonable per se.

The intermountain points are, of course, entitled to reasonable rates, but these rates that they now enjoy have been fixed by the Interstate Commerce Commission as rates reasonable in and of themselves. The intermountain points, however, look upon the Pacific Coast cities as their chief and most dangerous competitors, and so feel that they must resist every adjustment of rates which produces lower rates to the coast than to the intermountain points. One witness from Baker City, Oregon, in answer to my questions, said that in his jobbing business he met competition both from the East and from the coast, but the competition that he feared the most was the competition from the coast cities. The intermountain points are unable to deny the heavy movement of the commodities in question by water to Pacific Coast ports, but this fact does not convince them of the justice of permitting the rail carriers to make rates to meet this competition unless they make the same rates to the intermountain points.

### Barge Line a Factor

There is but one difference in the aspect of the present case, and that arises from the existence of the so-called Warrior line of barges, at the present time operated by the War Department of the United States government from St. Louis down the Mississippi River to the ports of New Orleans and Mobile. Through rates are being made by this line in connection with the steamers operating through the canal to Pacific Coast ports from St. Louis, Chicago and other Mississippi River points. Thus Chicago and St. Louis have some benefit of water competition through the canal at the present time.

The jobbers of the intermountain territory complain bitterly that under the adjustment sought by the carriers they will lose a considerable portion of jobbing territory which has accrued to them under the decision of the Interstate Commerce Commission removing Fourth Section relief when the ships operating through the canal withdrew from that service and entered the more lucrative trans-Atlantic service which existed during the war. But they were warned by the Interstate Commerce Commission in that decision, and by Commissoner Harlan, who wrote a dissenting opinion, as well as by the representatives of the coast cities, that any such jobbing territory thus gained could be merely of a temporary character and must be lost to them upon the return of the ships.

### Ignorant of Water-borne Commodities

And this is so, whether the commission grants Fourth Section relief in these cases or not, for the commodities in question are now moving in controlling quantity by ships to Pacific Coast ports, and are being distributed back into the territory formerly tributary to the coast cities. Many of their witnesses disclaimed any present knowledge of such distribution of water-bourne commerce, but some of them admitted with a degree of disgust that they were already beginning to feel the competition of the water-borne commodities.

The attitude of the Pacific Coast cities is that we want prosperous carriers both by land and sea, that we are deeply interested in the movement eastbound to points of consumption of the products of the soil, of the tree and the vine, and that if these rail carriers are deprived of the revenue, amounting to many millions of dollars, which they receive from this water-competitive traffic over and above the cost of the transportation or out-of-pocket cost, there is grave danger that our eastbound structure may be seriously affected.

### Purely Additional Traffic

The movement of this westbound traffic by the rail carriers is a matter of comparatively small expense, for it must be viewed as additional traffic which the rail carriers cannot otherwise get, traffic which is lost to them now and which, if they are to enjoy through the making of these water-competitive rates, is purely additional traffic.

These so-called terminal rates are similar to the export and import rates, which are made low so as to attract the traffic to the rails which would otherwise move entirely by water. And so the coast cities need for their best development prosperous ship operators and prosperous rail lines. The advantages which accrue to these cities through their location at seaports must be obtained through the efficient operation of both means of transportation.

I believe that the Interstate Commerce Commission will grant these applications of the carriers, although possibly with some modification. But the date when these lower rates shall become effective is very much a matter of doubt.

The intermountain people have stated on numerous occasions that if the commission grants the applications they will take the matter to the Supreme Court of the United States, and this will consume more than a year and a half from the present time. Since the last hearings in these cases, Congress has passed the Transportation Act of 1920, amending the Interstate Commerce Act in many particulars, and it seems that whenever this act is amended the Supreme Court of the United States is called upon to determine the meaning of the language used in the statute.

## Interior Is Warned

G. W. Luce, freight traffic manager of the Southern Pacific, uttered a warning so emphatic that it almost might be construed as a threat. He referred to assertions of interior shippers that they would be compelled to pay higher freight rates than would terminal points if the Interstate Commerce Commission should grant the application of the roads. "This statement, taken by itself, may be true," said he, "but the freight rates which interior communities will be required to pay will be higher than they are today or ever before if the carriers are denied the privilege of making rates fairly meeting canal rates. If the water service between the Atlantic seaboard and the Pacific Coast continues to increase and the transcontinental lines are prohibited from meeting the water rates, unless they make the same or lower rates to interior points (which they cannot afford to do unless water rates are sufficiently high) the traffic will move by water, and if the railroads must forego the revenue on that traffic it is quite evident they must increase the rates sufficiently on the only remaining traffic, which is that of the interior, to earn the necessary money to pay their bills."

## Page Freight Report

San Francisco, January 25, 1922.

Since our last report, dated December 27, the freight market in all lines has been particularly inactive.

Grain freights to the United Kingdom have shown no change and the limited business done is confined almost entirely to space shipments with the exception of the motorship Borgland, which takes practically a full cargo from the North to Irish ports for Kerr, Gifford & Company at 32/6 per ton. There has been booked for March movement about 25,000 tons of wheat from the North Pacific to Japan at a reported rate of $6 per ton, although in some instances a little lower rate has been obtained.

The steamers Viken and Antem have been closed for coal from Cardiff to Honolulu by the Inter-Island Steam Navigation Company at a reported rate of 20/-, and the steamer Politician to San Francisco for the same business by James Rolph & Company at 16/-.

Business in time chartering has been quiet, the only fixture reported being the Roxburgh by J. J. Moore & Company for one trans-Pacific voyage, delivery Pacific Coast, redelivery Australia, at 7/- per deadweight ton per month.

W. R. Grace & Company have taken the Johnson Line motorship Balboa for a full cargo of nitrate from Chile for Honolulu and Tacoma at $8 per ton, and Balfour, Guthrie & Company have chartered the schooner Camano for the same business at $5 per ton for discharge at Honolulu.

Hind, Rolph & Company report two fixtures, one, the steamer Wolsum for lumber for three ports in South Africa, Capetown/Delagoa Bay range, at a rate of $22.50 per thousand feet, and the steamer Tosca, also for lumber, to two ports in Japan on a lump sum freight of $47,500, charterers paying loading stevedores. Another steamer has been taken for three ports in Japan at $15 per thousand feet, and another at $47,500 lump sum, charterers paying stevedores. The Sweden Maru has been fixed at $52,000 lump sum for the same business, ship paying stevedores.

In our last report we gave the cable information that the motorship Indien had been fixed for ties to Port Sudan. This information proved to be incorrect, as the cargo in question is to be lifted by one of the Canadian Government Merchant Marine steamers at a reported rate of $28 Canadian currency.

The United States Shipping Board tanker Hammac was fixed to take gasoline from this coast to one port in the United Kingdom at $8.85 per long ton, charterers being the British Mexican Petroleum Company of London.

W. L. Comyn & Company have arranged to freight some 75,000 tons of paper from Portland to San Francisco, San Pedro and San Diego, and will use their motorships Boobyalla, Babinda and Balcatta for this business, the movement being for the account of the Crown Willamette Paper Company, terms private.

The selling market has shown quite a little activity, with the following steam schooners changing hands: Jim Butler to Hobbs, Wall & Company, on private terms; the Vanguard to the Richardson Company, $37,500; the San Antonio to the Santa Cruz & Monterey Steamship Company at $25,000, and the Wellesley to John Ogden on private terms. This last vessel was formerly owned here, was then sold to Gulf interests during the war, and will now return to enter the coastwise lumber business here.

PAGE BROTHERS, Brokers.

## Beyfuss Freight Report

San Francisco, January 26, 1922.

Our previous report was dated December 23, and the holidays intervening have contributed to the small amount of chartering that has been done in the meantime.

Grain to Europe: Again we have to report that this market is absolutely lifeless for full cargo movement, but parcels are going forward at about 35/-.

Lumber to the Orient has shown a decided falling off and only one or two fixtures are reported in the last four weeks, whereas quite a few were made each month previous, and we should call rates nominally $15.

On time charter there have been only two steamers reported fixed; one for two trans-Pacific rounds at the reported rate of 6/-, the other for early delivery North Pacific at 7/- for a trip, re-delivery Australia.

The most interesting fixture in some time has been a steamer from North Pacific to South Africa at the reported rate of $22.50.

Nitrate chartering has followed the general trend and also been very quiet. However, one of our sailing vessels is reported as having been fixed for early loading to the Hawaiian Islands at $5.

C. BEYFUSS CO., Brokers.

* * *

**Captain Carl Anderson,** master of the Southern Pacific ferry Garden City, San Francisco Bay, was suspended for six months by United States inspectors as a result of letting his craft run into a pier during a storm.

**H. C. Cantelow,** assistant general manager of the Pacific Steamship Company, has been appointed Pacific Coast manager of the Luckenbach Steamship Company, succeeding A. P. Hammond, resigned. Z. T. George, traffic manager of the Sacramento Northern Railroad, has been appointed his assistant.

# About People

## Ninety-fathom Dan

Captain Daniel E. Friele, retired commodore of the Pacific Mail fleet, who died in San Francisco December 29, was known from one end of the Pacific to the other as "Ninety-fathom Dan." How did he get such a nickname? His great caution in approaching land was the cause of its being applied, but some curiously conflicting testimony appeared in the newspapers immediately after his death as to precisely how and when the name arose. The San Francisco Chronicle, for example, derives "Ninety-fathom Dan" from his first voyage in command of a Pacific Mail liner; the Honolulu Advertiser insists that the soubriquet was bestowed upon him at Manila after he had command of Pacific Mail vessels for years.

Says the Chronicle: He won his nickname by what he said and did in following instructions given him by the company's agent at Panama, Captain John M. Dow, when he was first placed in command of a Pacific Mailer. He was to take the vessel from Panama to San Francisco.

The letter of instructions, still preserved, said:

"Making a voyage like this you are about to undertake, with the land almost constantly in sight on the one hand and a broad sea on the other, no excuse, as your ship is under control, can palliate a loss by striking the shore."

Friele's ship ran into a fog. He stopped and sounded. "Ninety fathoms and no bottom," said he, as the lead came up. "I'm safe." He got his ship safe to port. And he held his record for caution with all the other Pacific Mailers he commanded.

The Advertiser's account is quite as circumstantial:

Cap'n Dan got command of the China at the time the Manchuria and Mongolia were put in commission. He loved the China as a father loves an only child. He watched over her with a jealous eye, and he guided her into ports and up to docks as tenderly as if she were a girl. He never took the least chance.

In the old days before the docks were built in Manila, all ships had to lie at anchor in the bay. There was no breakwater then, and when the typhoons began to blow there was danger and lots of it for the ships and anxious hours for the skippers. The inner harbor was not very deep—those were the days before the dredgers got in their work.

When Cap'n Dan came into port with the China, he'd never bring her in close. Not he. He'd drop his mudhook nearly over at Cavite, which meant that the reporters had a long trip across the bay to reach her, and when it was rough—and it always was—it was no easy task to climb aboard from the launch.

Time and again the reporters used to chide Cap'n Dan about his caution. One day I met him ashore and over a cigar in the private office of the late Maurice Lowenstein, then the head of the company that acted as agents for the Pacific Mail, I asked him how much water the China drew. "Oh, when she's loaded deep, she'll use about 28 feet, but I always want about 90 fathoms under her when I come to this port," he replied.

The next morning's issue of the old Manila American had a story about "Ninety-fathom Dan," and that was the nickname he bore until he passed away last Thursday.

## Personals

**Captain R. C. Brennan**, port captain of the Pacific Steamship Company in the Orient, has succeeded Captain A. J. Storrs, resigned, as port captain at Seattle.

**Hammond Talbot**, one of the founders of the Williams Steamship Company and vice-president and director, has resigned. He is reported to be planning the establishment of an intercoastal steamship line.

**William Fox** has been appointed operating manager, Pacific Coast District, Shipping Board, San Francisco, succeeding William Kincaid, resigned.

**William G. Marvin** announces his withdrawal from the firm of Rosenberg, Ball & Marvin, New York, and his association with Samuel A. Pleasants for the general practice of law under the name of Marvin & Pleasants, 120 Broadway, New York.

**George W. Green** has resigned as assistant general manager of the Los Angeles Steamship Company to become assistant to A. J. Frey, in charge of Shipping Board operation.

**O. C. Scott**, vice-president and manager of the Inter-Island Steam Navigation Company, Honolulu, has resigned because of ill health and has been succeeded by Ferdinand H. Hons.

**Captain Harry Ramwell** has been elected president and W. T. Isted secretary-treasurer of the Northwestern Tow Boat Owners' Association.

**Robert W. Kelsey** of Seattle, clerk to the Senate committee on commerce, has been appointed analyst of the division of field information, Shipping Board.

**Percy S. Laing**, who resigned in December as head of the shipping department of Frank Waterhouse & Company, Seattle, has organized the Percy S. Laing Shipping Company, with offices in the Alaska building, Seattle.

**Captain F. J. Pierce** is the new member of the Bar Pilots' Association, San Francisco, succeeding the late Captain John J. Shea.

**A. T. Nott** is now superintendent of terminals of the Los Angeles Steamship Company, San Francisco. In this capacity he will perform the duties formerly handled by G. W. Green, resigned.

**W. L. Johnstone**, Pacific Mail agent in the Orient at different ports for the last few years, has been transferred to the San Francisco office.

**Roger D. Lapham**, formerly with the American-Hawaiian as agent in Seattle and Los Angeles and assistant traffic manager in San Francisco, has joined McCormick & McPherson, the name of which has been changed to McCormick, McPherson & Lapham.

**W. O. Cribben**, formerly with W. R. Grace & Company, San Francisco, and the J. H. W. Steele Company, New Orleans, has been appointed Portland manager of Norton, Lilly & Company, succeeding C. E. Johnson, who will have charge of traffic.

**B. L. McMullen**, who has been in charge of the Portland office of Sudden & Christenson, has been placed in charge of the newly-opened Seattle office.

**Richard H. Farley** has been appointed passenger traffic manager of the International Mercantile Marine, New York City, succeeding W. W. Jefferies, retired. Thomas R. Thorne and D. D. Weipert have been made assistant passenger traffic managers in charge of first and second-class departments and David Lindsay, assistant, in charge of the third-class department.

**A. C. Stubbe**, who recently resigned as manager of the Northwest Shipping Company, Portland, has opened offices in the Board of Trade building, Portland, as ship charterer and parcel freight solicitor.

# FIRE TUBE SUPERHEATERS SAVE FUEL ON RAILROAD TUGS

Bee Line Transportation Company's sea-going tug Wyoming

FUEL economy, increased capacity, greater operating efficiency and freedom from maintenance troubles — advantages claimed for the fire-tube superheater —have been convincingly established by the successful operation of high degree superheat on the sea-going tugs Wyoming, Perth Amboy and Lehigh, formerly owned by the Lehigh Valley Railroad and now owned and operated by the Bee Line Transportation Company.

The Wyoming, a vessel of 398 gross tons, 152 feet long, 27 feet 3 inches beam, and 16 feet draft, with a towing capacity of 5000 tons was the first American boat operating in American waters to be equipped with fire-tube superheaters. The Wyoming was superheated in June, 1915, by The Superheater Company (then the Locomotive Superheater Company).

In November, 1916, after a series of operating tests on the Wyoming had shown a coal saving of 15⅝ per cent, and an increase in capacity of from 865 I. H. P. on saturated steam, to 908 I. H. P. on superheated steam, a second tug, the Perth Amboy, was equipped with the same type of superheaters.

Similar and even more careful tests were run on the Perth Amboy, and the results compared with saturated steam operation under identical conditions. Superheated, the Perth Amboy developed 887 I. H. P. against 775 I. H. P. on saturated steam. A fuel saving of 15 per cent was shown.

The Lehigh, the third of the fleet, was equipped with the same kind of fire-tube superheaters in March, 1917. The Lehigh, after superheating, developed 803 I. H. P. against 633 I. H. P. on saturated steam. On the Lehigh, the fuel saving proved to be 17 per cent.

Any doubts as to the practicability of the fire tube superheaters, for use on this type of vessel, are removed by the performance and maintenance records of these superheater-equipped tugs. Over considerable periods of continuous operation, six years in the case of the Wyoming, five years on the Perth Amboy, and upwards of four years on the Lehigh, maintenance costs on the superheater equipment of these vessels have been practically nil.

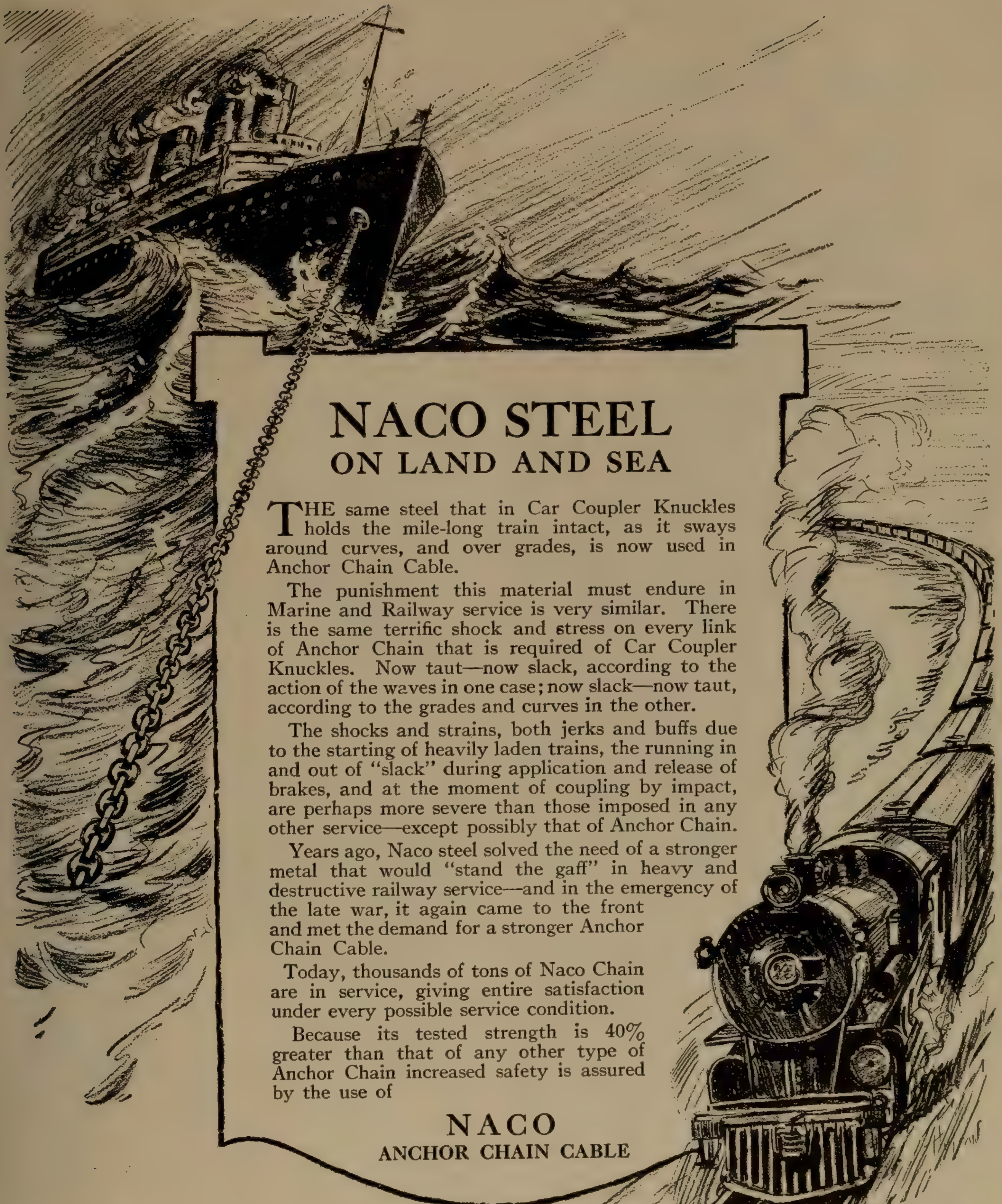
No trouble has been experienced through the use of cylinder lubrication. The Perth Amboy has run two and one-half years on one set of rings in the high pressure cylinder, with 180 degrees of superheat. All three ships average sixty to seventy hours on one quart of oil in the forced feed lubricator. Recent examination of the rods, rings and cylinder liners of these superheated tugs showed them to be in excellent condition.

The fire-tube superheater, as installed in the Lehigh Valley Railroad tugs, consists of three pairs of collector castings or headers, located at the uptake end of the boiler, each pair of headers being connected to a group or nest of superheater unit pipes, which run in and out of the boiler smoke tubes. Of each pair of headers one takes the saturated steam as it comes from the boiler and transfers it to the superheater units; the other receives the superheated steam after it has passed through the units on its way to the engines.

In this superheater there is a total of 80 units, arranged in three groups, corresponding to the number of pairs of headers. These groups, each made up of a saturated and a superheated header, with a system of units, are independent in their action, being separated from each other by valves, which can be closed if necessary.

The degree of superheat obtained can be governed by a mixing pipe, which keeps the superheated steam at any desired temperature by admitting the proper amount of saturated steam to the main steam pipe. The average steam temperature obtained with this superheater is about 565 degrees, which with a steam pressure of 180 pounds, is equivalent to 185 degrees of superheat. A maximum steam temperature of 620 degrees, corresponding to 240 degrees of superheat, has been successfully maintained.

High degree superheat and fire-tube superheaters have been employed extensively in European marine service for many years. It is interesting to note that the first American ship owner to equip a vessel with fire-tube superheaters was an American railroad on which high temperature superheat and superheaters had come to be regarded as essential to efficient, economical locomotive operation.



# NACO STEEL
## ON LAND AND SEA

THE same steel that in Car Coupler Knuckles holds the mile-long train intact, as it sways around curves, and over grades, is now used in Anchor Chain Cable.

The punishment this material must endure in Marine and Railway service is very similar. There is the same terrific shock and stress on every link of Anchor Chain that is required of Car Coupler Knuckles. Now taut—now slack, according to the action of the waves in one case; now slack—now taut, according to the grades and curves in the other.

The shocks and strains, both jerks and buffs due to the starting of heavily laden trains, the running in and out of "slack" during application and release of brakes, and at the moment of coupling by impact, are perhaps more severe than those imposed in any other service—except possibly that of Anchor Chain.

Years ago, Naco steel solved the need of a stronger metal that would "stand the gaff" in heavy and destructive railway service—and in the emergency of the late war, it again came to the front and met the demand for a stronger Anchor Chain Cable.

Today, thousands of tons of Naco Chain are in service, giving entire satisfaction under every possible service condition.

Because its tested strength is 40% greater than that of any other type of Anchor Chain increased safety is assured by the use of

NACO
ANCHOR CHAIN CABLE

THE NATIONAL MALLEABLE CASTINGS CO.
CLEVELAND OHIO

THE NMCCo

Ship Repairs by Experts

Builders of Seventeen steel vessels, including their engines, windlasses and condensers.

GENERAL MARINE REPAIR WORK

HULL AND ENGINE

Contractors for some of the largest Repair Jobs Ever Done at the Port of Portland.

Drydock Facilities Ample for Vessels up to 15,000 Tons.

Albina Engine and Machine Works
PORTLAND OREGON

## EMPLOYMENT OFFICES TO BE PERMANENT ADJUNCT TO PACIFIC COAST SHIPPING

THE Sailors' Union of the Pacific recently published two documents for distribution among the men employed on vessels owned by members of the Pacific American Steamship Association and the Shipowners' Association of the Pacific Coast. One of these documents—openly distributed—was a "smoke screen" for the other which was read at meetings of the union and distributed as a confidential communication.

The first document, which bears the title "A Sound Warning and the Shipowners' Queer Policies," purports to be a warning especially directed to young marine workers against acts of criminal syndicalism. The second, or confidential, pamphlet, entitled "How Shall We Get Rid of the Shipowners' Shipping Office? Use the Old Remedy: The Oracle," shows the marine worker how to throw wooden shoes into the machinery of the American merchant marine—and incites him to do it.

### Would Wreck the Merchant Marine

Since the adoption last August of the American plan of operation we have discussed with all our employes from time to time questions that came up of vital interest to both of us. We are going to make a few plain statements in this bulletin about these latest publications of the Sailors' Union. We decided to do this because you are interested with us in the maintenance and development of the American merchant marine, which these so-called leaders would wreck in their selfish effort to regain for themselves the power to regulate your life and opportunities—and assess you for the cost of the regulation.

We also think it important that the members of Congress instrumental in amending the Seamen's Act should know that they were misled by some of their labor-leader-advisers and induced by them to employ in the act certain conditions which are in reality weapons designed for use in carrying out acts of sabotage.

### A Gun to Shoot the Goose

"The Seamen's Act," the confidential circular of the Sailors' Union says, "is not a roasted goose, it is a gun with which to shoot the goose."

The joint employment service against which the Sailors' Union publication is directed was established by the Shipowners' Association of the Pacific Coast and the Pacific American Steamship Association to insure a square deal both to the marine worker and the shipowner. This policy has governed the operation of the service.

It is the joint employment service which has enabled the shipowners to maintain wages on the Pacific Coast in spite of the demoralized wage condition which has existed on the Atlantic Coast for the last three months where marine workers are offering their services for from 30 to 50 per cent less than the wages being paid by the shipowners of the Pacific Coast.

Andrew Furuseth, secretary of the Sailors' Union, in a letter to the shipowners' associations which is reproduced as part of Publication No. 1 (A Sound Warning) accuses the shipowners of encouraging the employment of "wobblies" or "I. W. W.'s" on their ships. Furuseth knows that this was not true.

The fact is that the shipowners warned Furuseth and other marine union leaders that the "red" element in the Sailors' and Firemen's Unions was becoming a menace to Pacific Coast shipping and that if they would avoid drastic action by the Federal authorities

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Visit Mexico, Guatemala, Salvador, Panama Canal, Havana

The new de luxe passenger and express-freight service of the Pacific Mail Steamship Company between San Francisco, Los Angeles and New York is a travel opportunity of never-ending interest and delight.

Sight-seeing stops at picturesque Manzanillo, Mexico; San Jose de Guatemala; Acajutla and La Libertad, Salvador; Cristobal and Balboa, Canal Zone; Havana, Cuba; Baltimore and Norfolk.

Sailings from New York, San Francisco and Los Angeles about every 18 days. Modern American twin-screw ships "Colombia," "Ecuador," "Venezuela" and "Santa Ana," especially designed for Tropical service. De luxe suites. Home-like staterooms. Electric fan in every cabin. Deck sports, music. Swimming tank. More than 73 years' experience in pleasing passengers makes Pacific Mail cuisine a delight. Fares, first-class, $270 and $300.

Panama Service — Sailings about every 22 days — between San Francisco, Los Angeles, Mexico, Central America and Canal Zone

For complete information see nearest steamship tourist agent or railroad agent or send coupon to nearest Pacific Mail office.

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Send me, without obligation, data descriptive of your new service between New York, San Francisco and Los Angeles.

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they should organize a thorough house-cleaning both of the unions and of the columns of the Coast Seamen's Journal. This has been done to some extent. Such part as Furuseth played in the cleaning was dictated by self-preservation, as the elements he drove out would have probably driven him out had they retained control. Furuseth knew this. That the cleaning was more apparent than real—more in the line of kalsomining than a general overhauling—is evident by the fact that the Sailors' Union, immediately after the house-cleaning, issued a regular I. W. W. attack on the shipowners' employment service.

### "Any Old Bull" Still on Deck

"The house-cleaning" in fact must remind you of the telegram sent last June by the local officers of the Engineers' Union asking Ernest F. Pegg, who was in New York representing the San Francisco engineers in the wage readjustment conference, to "send a telegram in morning giving everyone pep. Also send along day letter to me to read at meeting full of any old bull," so that you would be deceived as to the progress of the negotiations.

The shipowners' employment service enables shipowners on the Pacific Coast to run their vessels on a business basis—the only basis on which they can continue to operate. It gives the marine worker an opportunity he never had before for personal advancement. It insures steadier employment for men willing to work than would be possible where no such agency exists. It opens the merchant marine to the American boy and offers him a real career.

The employment service permits the shipowner to control matters that are strictly his business; it gives the individual worker the full, personal benefit of his own work and it protects the men from the "agents" and "patrolmen" who formerly had access to the ships and who abused this license by keeping stirred up a constant brew of trouble.

It is only in the confidential communication that the employment service is directly attacked.

### Furuseth's Smoke Screen

In the "A Sound Warning" publication, which is signed by Furuseth, he says: "I deem it my duty to submit a copy of the law of the State of California defining and dealing with criminal syndicalism."

The law defines "criminal syndicalism" as any doctrine advocating the commission of sabotage as a means of accomplishing a change in industrial control.

Sabotage is defined as wilful and malicious physical damage or injury to physical property.

In this connection we would like to say that a ship may be damaged by desertion just as directly as a delicate machine could be wrecked by dropping a wooden shoe into the mechanism.

Furuseth also writes:

America has given you freedom to quit your vessels in American ports. The United States struck the shackles from your limbs. You have the right to think highly of such a country, but you must realize that with freedom comes responsibility. This you cannot shirk. To listen to proposals that are contrary to law you cannot at all times help, but there is no reason why you should encourage or tolerate it. If you are a real man you must be able to see and understand that when you do you are returning evil for good.

America gave you freedom and if you listen and agree to proposals that the American people have stamped as criminal you become allied with those who advocate them and must take the consequences.

### The Confidential Advice

From the same source as emanated this good advice there appeared also the secretly distributed pamphlet entitled "How Shall We Get Rid of the Shipowners' Shipping Office?" in which those in the confidence of the Sailors' Union are given lessons in the art of sabotage. In this pamphlet, which was read in every union hall on the coast and copies of which were given to those who could be trusted, it is not felt necessary to resort to the camouflage of respect-for-the law. It gets right down to business like this:

"To get rid of the shipowners' offices we must make the offices a failure. The offices are established to get men for the vessels, to keep the vessels from being delayed. If the office causes delay instead of preventing it, the office is a failure and will be abolished.

To make the office a failure—to make it the reason for delay—to make it the cause of delay—the men must ship through it and then when the vessel is ready to cast off the lines the men walk ashore, because they were shipped in or by the office. You knew how to do this when you shipped out of the union office. You know how. You do not need to learn this, as you have practiced it.

The vessel is ready and the master orders the lines cast off. You cast your duds on the wharf and then follow your duds. The vessel is delayed. She must find another crew. This crew may do the same or go up the coast and leave her there. She is again delayed. How long will the shipowners stand for that? Especially in passenger vessels? We did this years ago and abolished the offices. We did it even when we were arrested for it and were brought back to the vessel and compelled to work.

We certainly can do it now when we cannot be arrested for doing it in any safe harbor. The Seamen's law, Section 7, gives all seamen in American ports the right to quit at will."

### What Law Really Says

For your information we are publishing herewith a copy of that part of Section 7 which refers to leaving ship and from which you will see that the law regards the kind of "quitting" advocated by the Sailors' Union as an "offense" against the American government, the government to which, Mr. Furuseth says in the openly distributed pamphlet, you are indebted for your freedom. Here's what Section 7 says about "quitting":

Sec. 7. That section forty-five hundred and ninety-six of the Revised Statutes of the United States

(Continued on page 56)

PROPELLERS
OF
*Manganese Bronze*

A 17' diameter Bronze Propeller
made by us

BRONZE CASTINGS FORGINGS SHEETS RODS

AMERICAN MANGANESE BRONZE CO.
Holmesburg—Phila—Pa.
*(Send for complete catalog)*

(Continued from page 50)

rangement in small cruisers or runabouts. Considering all of the above points, it would be desirable to see the naval architects and motorboat engineers support sound engine design by so designing boats that they will take engines with the deep oil sump, thereby making the entire assembly of the engine standard. It will probably be necessary to make both light and heavy flywheels because the high speed runabout engine does not require so heavy a flywheel as the cruiser.

In marine settings the same supporting arms are used as in tractor or truck settings, but two foundation plates are arranged to give free three-point suspension. Distortion of the hull in a sea-way will not throw the engine out of line relative to the shaft.

Photo Manning Bros.

Mail service boats on Detroit River equipped with J. V. B. motor and reverse gear

### Right and Left Hand Engines

Both right and left hand engines are produced by this builder to meet the demands of commercial uses such as fire pump drives, and also to permit both engines running outboard in twin-screw marine installations. This last requirement is of doubtful utility in small boats. If both engines run in the same direction, little difference will be noticed except on an entirely free rudder. Several boat-builders are working on twin installations on which both engines will run in the same direction. To make engines run in the opposite direction, the oil pump, magneto, water pump and generator must be reversed. A different camshaft also must be used. For reverse rotation this same camshaft is used by turning it end for end.

A positive displacement gear circulating pump is used for cooling water instead of a centrifugal pump because the latter is not so reliable in picking up suction.

### Sliding Reverse Gear

The sliding reverse gear of this engine is very interesting. Heretofore the basis for all motorboat reverse gears has been the planetary principle, except in the few instances where automobile engine transmissions have been used, and these have not been satisfactory because of low reverse speed. This gear has an 82 per cent reverse and 1 to 1 can be used if desirable. It has been tried out under all conditions and is absolutely satisfactory. It has a positive neutral. The engine can run ahead free, while the propeller is turned easily by hand in the reverse direction. To reverse it is only necessary to throw out the clutch and snap the gear into the reverse position as easily as it is done in an automobile. In the neutral position there is no drag because of dry disc construction. This is probably the only practical way to reverse the propeller and in twin-screw or auxiliary installations with a dead engine the advantages are enormous. The dragging propeller can turn freely with minimum loss of power. Cable, and rod and lever rig, for distant operation of the clutch and reverse gear, can be applied because they operate in only one plane, backward and forward. Little force is needed for the reverse or forward movement of the gear. All wear is automatically taken up by the coiled spring which actuates the clutch.

### Lubrication

Any grade of oil can be used, heavy or light, because the lubrication system has been worked out on the theory that oil specifications are hard to meet in thinly populated districts. A boat-owner takes what he can get. Of course oils are not all of equal lubricating value, and we recommend a good grade of oil, but even kerosene would prevent a bearing burning out if applied liberally by forced feed. The oil pump of the gear type, and driven by the gear train at front of engine, is immersed in the oil sump. A bayonet type of oil gauge shows oil height at all times. The oil after leaving the pump passes through the various channels, which are cored and drilled in the crank to the main bearings, thence through the crankshaft to the crank pins and through the oil tubes on the connecting rods to the wrist pins. The camshaft bearings are lubricated under pressure and the oil then passes to the timing gears through a groove. The gear train rotates in a flood of oil. Not a single fitting or screwed joint is used in the oiling system. An oil pressure gauge shows the correct pressure, which is four to twelve pounds at all engine speeds.

## TRADE LITERATURE

**Don't Let It Happen to You —Williams Tool Corporation, Erie, Pennsylvania.**

An attractive booklet of 60 pages bound in straw-colored pressboard with red and black stampings. This booklet sets forth in its first seventeen pages a series of parables under the general caption, "Don't let it happen to you", in which opposite pages show the parallel between a day of pleasure with the family and a day of business in the factory, the moral being strongly brought out that in either case it is necessary to prepare intelligently for the object in view in order to have it properly accomplished. The application in business is made particularly to the management of a pipe shop and the necessity of being prepared for emergencies in machining operations by stocking up properly with the Williams line of correct pipe threading machinery and dies.

The care, repair, grinding and general maintenance of dies and chasers is covered very fully, and much valuable general data for the pipe shop foreman and manager is compressed into convenient, handy form.

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**Ingersoll - Rand Products— Ingersoll - Rand Company, New York.**

A very attractively gotten up, conveniently arranged, condensed catalog giving a general view of the various products of the Ingersoll-Rand Company, together with a useful collection of engineering data. Each page of this catalog refers by number to the individual bulletin available for detailed information on the particular line in hand.

The book is in loose leaf form, has a parti-colored cover with gold stampings and on the inside front cover a beautiful art study showing five of the plants of the Ingersoll-Rand Company, with artist's drawings of various uses of rock drills. These are reproduced beautifully in colors.

For easy reference the subject matter of the catalog is divided by a tab index into a number of classifications, such as compressors, vacuum pumps, condensers, oil and steam engines, Cameron pumps, air-lift pumps, rock drills, drill sharpeners, pneumatic tools, tie tampers, miscellaneous, and engineering data.

**How Some Ship Owners Have Increased Their Profits— Bulletin 134—Diamond Power Specialty Company, San Francisco and Seattle.**

This is the third edition of this popular bulletin, which describes the application of Diamond soot blowers to all types of marine boilers and also the savings to be effected by such application as compared with the old methods of hand cleaning.

Engineers and owners of vessels have supplied the Diamond Power Specialty Company with many testimonials as to the effectiveness of their apparatus in actual sea service. Savings as high as 7 per cent of the entire fuel bill are acknowledged by managing owners to be the direct result of the installation of Diamond soot blowers.

**MADESCO PRODUCTS**

MARINE DECKING & SUPPLY CO. PHILADELPHIA

**LIT-O-SIL-O DECKING**
**MADESCO MARINE PAINTS & VARNISHES**
**MADESCO WOOD & STEEL TACKLE BLOCKS**
**MADESCO BITUMINOUS SOLUTION & ENAMEL**

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WRIGHT & LACY—SAN FRANCISCO

DESIGNERS AND BUILDERS OF THE

**KERR**

Marine Turbines and Reduction Gears for Main Propelling Units
Also Turbine Driven Generators
Pumps and Blowers

**Kerr Turbine Co.**
WELLSVILLE, N. Y.

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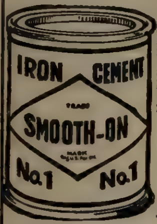

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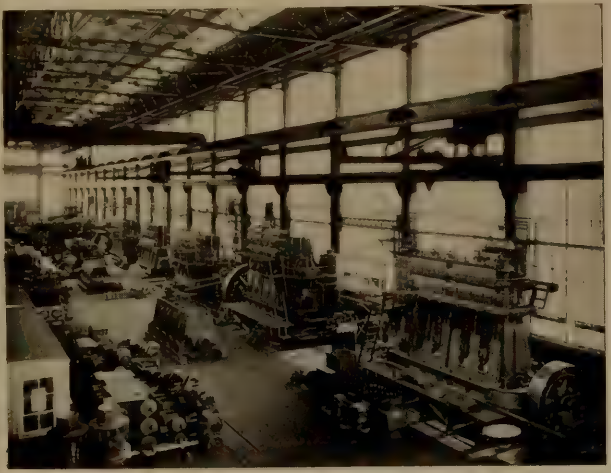

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(Continued from page 53)

be and is hereby amended to read as follows:

"Sec. 4596. Whenever any seaman who has been lawfully engaged or any apprentice to the sea service commits any of the following offenses, he shall be punished as follows:

First. For desertion, by forfeiture of all or any part of the clothes or effects he leaves on board and of all or any part of the wages or emoluments which he has then earned.

Second. For neglecting or refusing without reasonable cause to join his vessel or to proceed to sea in his vessel, or, for absence without leave at any time within twenty-four hours of the vessel's sailing from any port, either at the commencement or during the progress of the voyage, or for absence at any time without leave and without sufficient reason from his vessel and from his duty, not amounting to desertion, by forfeiture from his wages of not more than two days' pay or sufficient to defray any expenses which shall have been properly incurred in hiring a substitute.

Third. For quitting the vessel without leave, after her arrival at the port of her delivery and before she is placed in security, by forfeiture from his wages of not more than one month's pay.

In referring to the penalties imposed for desertion the pamphlet says:

You will lose what money you have coming to you. Yes, that is true. What are you willing to do to get rid of the shipowners' offices here and elsewhere?

### Jokers in Seamen's Act

The pamphlet then goes on to show how by the aid of little jokers in different parts of the Seamen's Act this loss of pay can be reduced or altogether avoided. A joker is located in Section 2 and another in Section 4 and employes are invited to join the union and learn how to wreck the American merchant marine without risking conviction on a charge of sabotage.

This little game is called "practicing the oracle."

"Now please understand," says the pamphlet, "you are not to practice the oracle now. You are to learn what it is and how to use it. When you know you will be able to fight the shipping office and you will be able to abolish it in short order."

### Workers Have All to Lose

In the fight outlined in the "Oracle" pamphlet the workers would have everything to lose and the union leaders everything to win for themselves.

The Sailors' Union admits that the employment service "gets men for the vessels and keeps the vessels moving." No real friend of the marine worker should have any quarrel with this because it's only when ships have crews and move that they can make enough money to pay wages.

### Wages Highest in the World

The employment service, however, has done more than this. It has made it possible for the shipowners on the Pacific Coast to maintain the highest wages paid marine workers in any part of the world and this in the face of reductions not only on foreign ships but on the Atlantic seaboard on American ships that come to the Pacific and seek business in competition with us.

These reductions elsewhere will probably compel reductions here, as the difference between the wages paid on Pacific Coast ships and those shipping crews elsewhere is beginning to hamper us in our efforts to get business.

For more than three months able seamen have been shipped on the Atlantic Coast for as low as $30 a month against $72.50 for able seamen shipped through our employment office for offshore work and $77.50 in the Pacific coastwise lumber trade.

These high wages have been maintained ever since the strike was terminated.

Here are some actual figures to think about. Under the Pacific Coast scale oilers are paid $80 a month; firemen, $75; and coalpassers, $65. Oilers, firemen and coalpassers are being shipped on the Atlantic Coast for from $25 up—and not very far up. Sailors shipped through the Pacific Coast shipowners' employment service are paid from $52.50 to $77.50 a month, according to rating and the trade. Sailors are being shipped on the Atlantic Coast as low as $32.50 a month.

It will be necessary to reduce wages on routes that bring us in direct competition with the lower wages elsewhere. We'll meet each situation as it develops and according to the competition we have to bid against.

In this connection the shipowner, while desirous of paying the highest wages practical, is also faced with the necessity for reducing transportation charges to as nearly the pre-war scale as possible.

That we have been able to maintain high wages so long, that we will be able to make equitable adjustments to meet changing conditions, is due entirely to the officiency of the joint employment service which the Sailors' Union wants to destroy.

### Employment Service Permanent

The employment service is working better for the men and the ships than any plan hitherto tried. The members of both owner associations take this opportunity to notify all hands that as far as Pacific Coast Shipping is concerned, the shipowners employment service is a permanent adjunct to the American merchant marine.

We know and you know that the salaried officers of the maritime unions are the only persons who have any interest in abolishing this service. The best evidence that it is being handled on the square deal basis lies in the fact that even in a secretly distributed circular the enemies of this service and of all other progress that doesn't directly fatten them, haven't one word to say against it.

You know that it has kept up your wages. They admit that it keeps ships moving—which means that it keeps payrolls alive. Could you ask for any better arguments as to why you should continue to co-operate with the shipowners to make the employment service a permanent success?

---

**Victor Ash Ejector — Victor Engineering Company, Philadelphia, Pennsylvania.**

A 10-page booklet describing this efficient marine or stationary plant ash elevator, which works on the steam jet principle without a pump and which has the further advantage that the ash intake hold is on the floor level and is of just the right diameter to admit the maximum size clinker which can be handled by the pipe ejector. Another feature is the foolproof nature of this machine, all operations being interlocked in such a way that they synchronize automatically.

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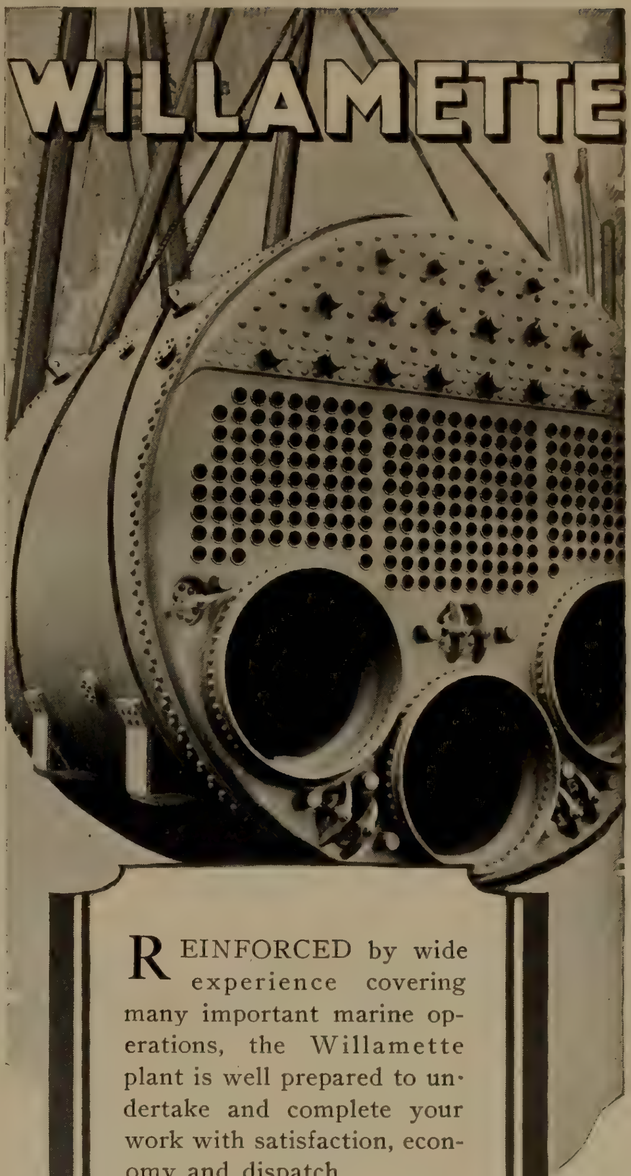
**Production Book—American Spiral Pipe Works, Chicago and New York.**

An 88-page attractively bound volume describing the manufacture of spiral riveted pipe, of lap welded steel pipe, of forged steel pipe flanges, and of corrugated furnaces for boilers, as carried on by the American Spiral Pipe Works, and showing by photograph and description a few of the engineering problems which have been met by the use of spiral riveted pipe in difficult situations.

The principal object of the book as published was to indicate by reference to engineering service in the past the equipment of the American Spiral Pipe Works to solve present and future engineering problems of pipe users.

Taylor's spiral riveted pipe has been in use for many years. In its manufacture a strip of steel is wound into helical shape with one edge overlapping the other. This overlapping edge is then riveted under tremendous pressure, insuring complete filling of the rivet holes and with slight countersink. It has been demonstrated under hydraulic tests that the seam is the strongest part of this pipe. The pipe is furnished cut to exact length with forged steel flanges attached and with fittings in accordance with specifications. In lap welded pipe the regular commercial sizes run from 12 to 72 inches in diameter. For special work, as in cylinders and drums, sizes run up to 132 inches in diameter.



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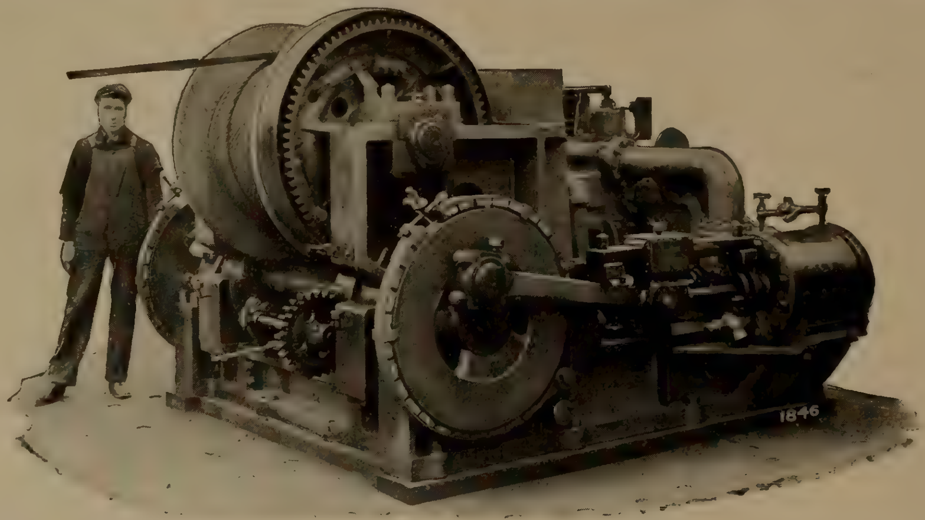

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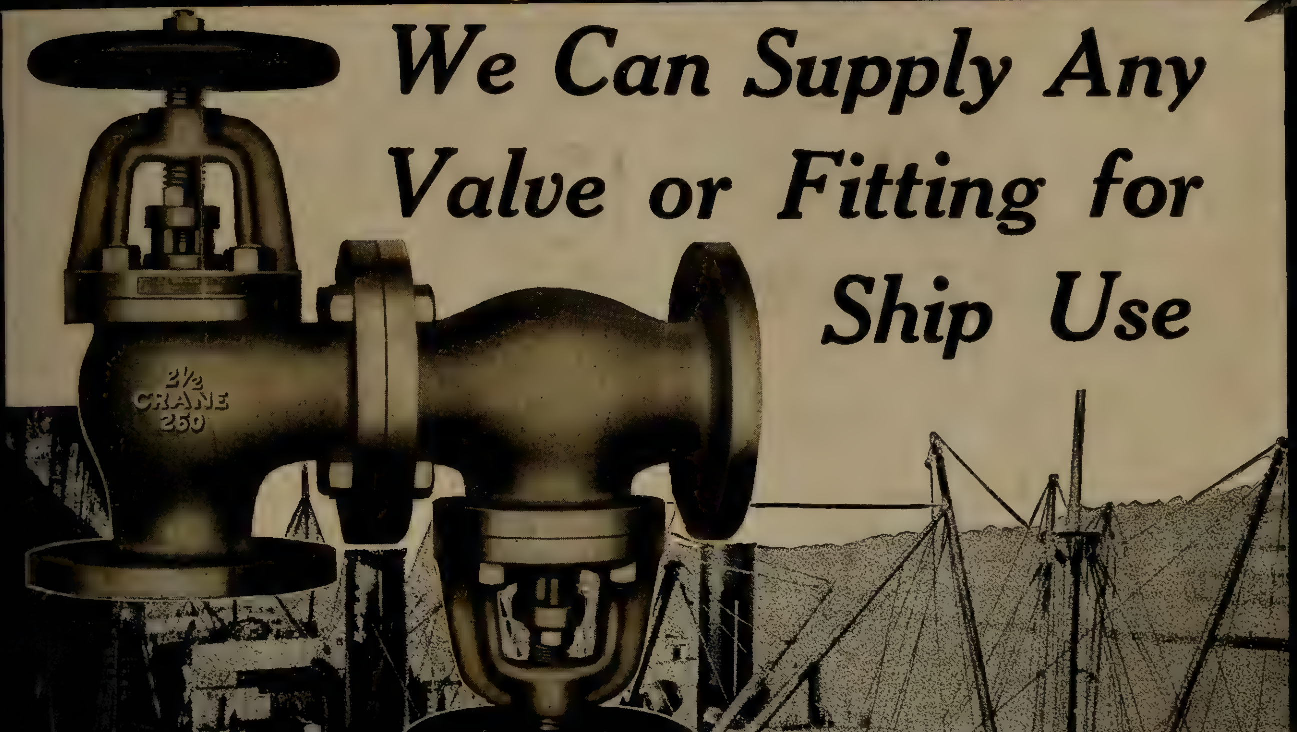
The National Magazine of Shipping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# Pacific Marine Review

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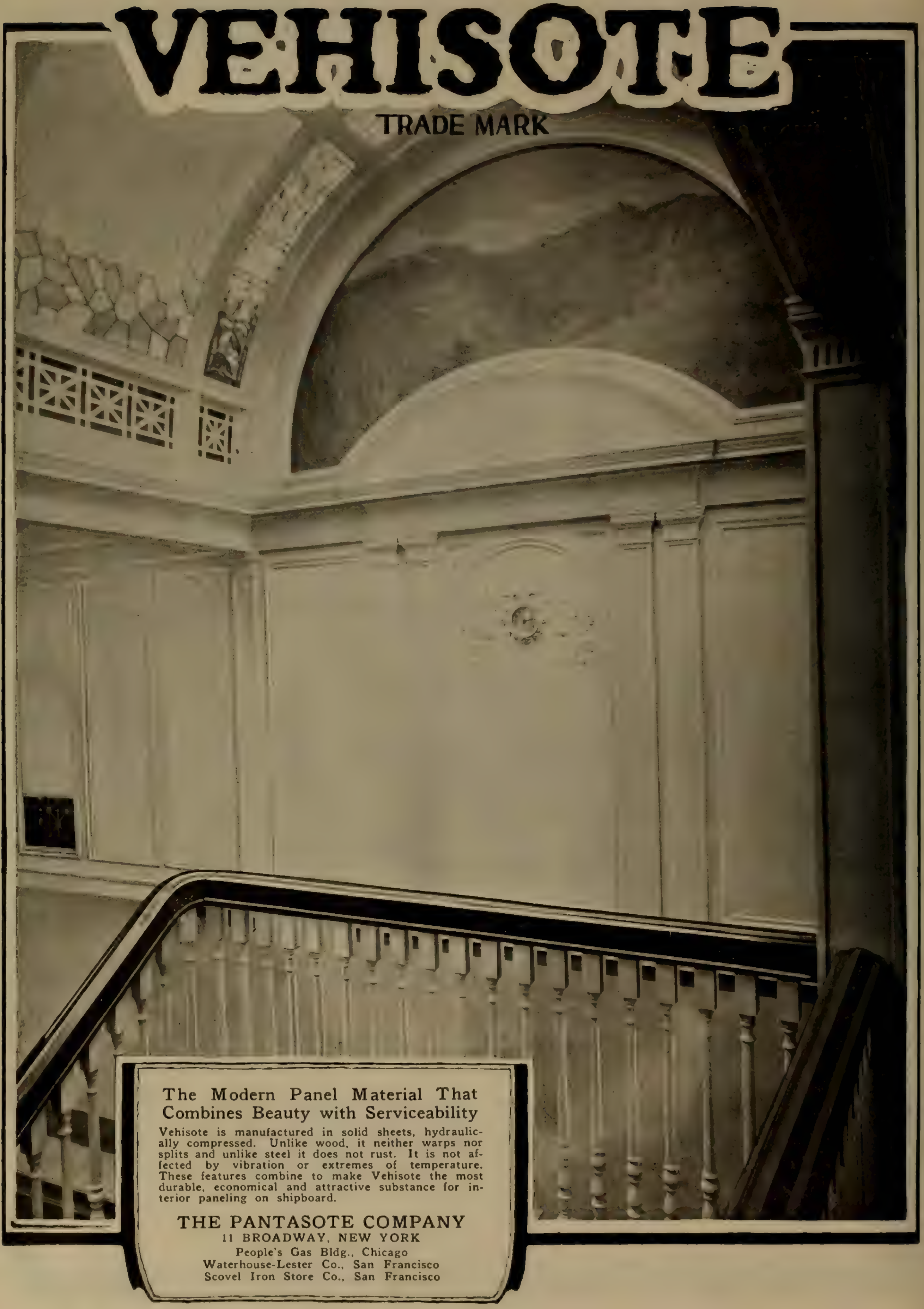

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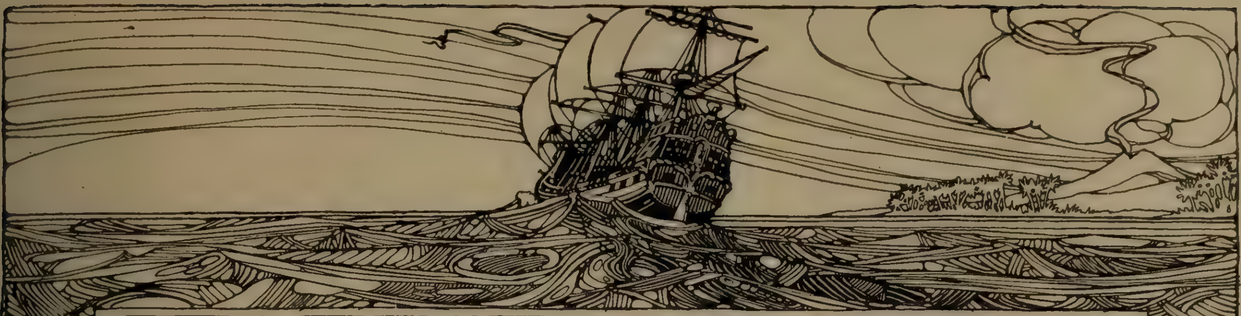

# Administration Subsidy Plan

HERE is how the government plans to aid the growth of an American merchant marine through a subsidy plan presented to Congress by President Harding on the 28th day of February:

1. Liberalization of restrictive marine laws.

2. Shipping Board to sell remaining government ships, not by competitive bidding, but by prices to be fixed by it.

3. Establishment of $125,000,000 loan fund, from which shipbuilders can borrow money at 2 per cent.

4. Reduction of income taxes on shipping corporations equal to 5 per cent of value of goods shipped under the American flag.

5. Government to waive all such income taxes, when the amount of taxes is to be applied, to half the cost of new ship construction.

6. Establishment of regulation compelling 50 per cent of all immigrants coming to America to travel on American ships.

7. Establishment of a merchant marine reserve comprised of sea-faring Americans in merchant marine service.

8. All government transportation to be done in American ships, including army and navy transportation.

9. Extension of coastwise shipping laws to include the Philippine Islands.

10. Direct government aid to be withheld when companies are earning more than 10 per cent profit, or, when government aid has been extended, all over 10 per cent to be turned over to the government.

11. Ten per cent of all customs duties is to be devoted to a revolving fund (about $30,000,000 annually) to provide means of extending aid.

12. Tonnage taxes (amounting to about $2,000,000 annually) to be paid into same fund.

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BUILDING of ships antedates the dawn of history. The Argo ploughing the unknown waters of the Euxine Sea, the Phoenician Galley, clearing the Pillars of Hercules to explore the trackless wastes beyond, the Great Dragon of the hardy Norsemen, breasting icy seas to find the green and fertile shores of Vineland—all were the masterpieces of craftsmen who even thus early felt themselves to be the upholders of an old and honorable tradition.

The centuries since these far-distant years have seen many wonderful changes in the materials and technique of their craft. The Great Dragon of the Sea Kings of the North was a wonderful ship and a daring innovation in her day, yet she would be but a cockboat beside the stately liners of the present.

Yet the fundamental principle—the tradition of service, of character that animates the craftsman whose work must meet the testing of the sea in its anger—is the same today that it was in the days of the Argo.

From the day of its organization, and the laying of its first keel, the New York Shipbuilding Corporation has felt itself to be one of the guardians of an ancient and noble ideal; and for proof of how worthily its craftsmen have upheld and still uphold their lofty standard, we bid you look to the ships, fashioned by these craftsmen, now serving in every ocean.

NEW YORK SHIPBUILDING CORPORATION

*Pacific Marine Review*
The National Magazine of Shipping
*March, 1922*
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# THE CLIPPER SHIP STAG HOUND

By F. C. MATTHEWS

THE Stag Hound was the first of the very sharp clippers and at the time of her launching, December 7, 1850, was the largest and longest American merchantman. Her model was an "original" and she was designed, modeled, draughted and built by Donald McKay, East Boston, who also draughted her spars.

She was very sharp forward, her bow favoring the appearance of a steamboat more than a ship and her after lines were equally clean. Her dimensions were: Length, keel, 207 feet; between perpendiculars, 215 feet; over all, 226 feet; rake of stem, 6 feet; rake of stern-post, 2 feet; breadth of beam, 39 feet, 8 inches; depth of hold, 21 feet; depth of keel, 46 inches; dead rise at half floor, 40 inches; sheer, 30 inches. She had a small stern and at 8 feet from midships of taffrail was only 24 feet 6 inches wide. Her tonnage was 1534, old measurement, equivalent to not over 1100 tons British contemporary measurement, or about 950 tons present American method of figuring.

Considering her length and breadth these tonnage figures give a good idea of her extremely sharp lines. Her spars and sails were of most unusual proportions; with jib-topsail, water sails, gaff-topsails and moonsails, her spread of canvas was nearly 11,000 yards. All her masts raked alike, 1¼ inches to the foot. The distance from center of stem to the foremast was 50 feet; thence to the main mast, 67 feet; thence to the mizzen mast was 56 feet; thence to sternpost, 42 feet. The following are the lengths in feet of her spars:

| | Fore | Main | Mizzen |
|---|---|---|---|
| Lower masts | 82 | 88 | 78 |
| Topmasts | 46 | 51 | 40 |
| Top gallant masts | 25 | 28 | 22 |
| Royal masts | 17 | 19 | 16 |
| Skysail masts | 13 | 15 | 11 |
| Lower yards | 72 | 86 | 60 |
| Topsail yards | 57 | 68 | 48 |
| Topgallant yards | 42 | 53 | 36 |
| Royal yards | 32 | 42 | 27 |
| Skysail yards | 24½ | 32 | 22 |

### Model Criticized at New York

The Stag Hound was launched in about 100 days from the laying of her keel and was built to the order of George B. Upton and the prominent East India merchants, Sampson & Tappan, both of Boston, two of the principal clipper-ship owners, who often operated together. To no other two firms can more credit be given for the development of the clipper fleet.

The American clipper ship Stag Hound, one of Donald McKay's original creations

The Stag Hound arrived at New York in tow of the Boston tug R. B. Forbes on December 31, 1850, and the following day was placed on the sectional dock, Pike street, to be caulked and metaled. Her loading berth was at the foot of Wall street, there being no ferry there. She went under the command of Captain Josiah Richardson, who had the name of being a skillful navigator, and who had been in the employ of Enoch Train & Co., Boston, in trans-Atlantic traffic.

The lines of the Stag Hound were so much sharper than those of any ship that had been built previously that some of the oldest and most conservative authorities were doubtful of her stability and seaworthiness. Some time since a former clerk in a leading New York shipping house of that period recalled a conversation he overhead between Walter R. Jones, the then president of the Atlantic Mutual Insurance Company, and Captain Richardson, on board the ship, a few days after she had hauled into her loading berth. Mr. Jones was acknowledged to be the leading marine underwriter and was head of the leading marine insurance company of New York. Nobody knew any more about ships than he did. After examining the ship critically, lower hold, 'tween decks, spars and rigging, nothing escaping his observation, he met the captain on the after deck and said: "Captain Richardson, I should think you would be somewhat nervous in going so long a voyage in so sharp a ship, so heavily sparred." "No, Mr. Jones," was the reply, "I would not go in the ship at all if I thought for a moment that she would be my coffin."

### Disastrous Start of First Voyage

She had quick dispatch and left New York February 1, 1851. Her crew comprised 36 A. B.'s, 6 ordinaries and 4 boys before the mast. When six days out, broke off main-topmast, which, in its fall, took all three topgallant masts. Soon after the disaster took a W. S. W. and westerly gale and ran the ship dead before the sea and wind. Repairs were made from spare spars but no main-topsail was carried for nine days and it was twelve days after the accident that topgallants were ready to set. The westerly gales forced the ship greatly to the eastward, so that her crossing the line was in 28 degrees 30 minutes, twenty and one-half days from New York. Captain Richardson thought that but for the accident his run would have been about sixteen days.

From the equator to 50 degrees south the Stag Hound had the good run of twenty-two days; passed Cape Horn forty-nine days out and on the fifty-seventh day was in 50 south in the Pacific. Nine days thereafter she was at anchor in Valparaiso harbor, from whence Captain Richardson wrote to his owners under date April 8, 1851, as follows: "Your ship Stag Hound anchored at this port

Photo by P. F. Watts from a painting in Sailors' Sung Harbor
The Stag Hound taking pilot off New York, January 11, 1852, 94 days from Whampoa

this day, after a passage of sixty-six days, the shortest but one ever made here and if we had not been dismasted on February 6th, our passage, doubtless, would have been the shortest ever made. The ship is yet to be built to beat the Stag Hound. Nothing we have fallen in with yet can hold her play. I am in love with the ship; a better sea boat, or working ship, or dryer, I never sailed in."

The Stag Hound was at Valparaiso five days; thence had a passage of forty-two days to San Francisco, light winds and calms prevailing. Was twenty-one days from Valparaiso to the line and twenty-one days hence. Total time from New York, 113 days; total days at sea, 108. Best day's run, 358 knots.

Sailed from San Francisco June 26; went to Manila and thence to Canton, where she arrived September 26. Loading there a cargo of tea on owners' account, she sailed October 9; cleared Sunda Straits 31st; then had twenty-six days to Cape of Good Hope. Arrived at New York after a passage of ninety-four days from Canton.

### Satisfactory Results of First Voyage

Her outward cargo to San Francisco had been secured at about $1 per cubic foot, her freight list exceeding $70,000. Her homeward cargo of tea was sold at auction by Haggerty, Draper & Jones and a few days after, when the earnings of the voyage had been computed it was found that the ship had been absent ten months, twenty-three days and that she had paid for herself and divided among her owners over $80,000.

At New York Captain Richardson left the ship to take the new clipper Staffordshire, belonging to his former employers, Train & Co. Captain Behm took command of the Stag Hound.

### Second Voyage

Left New York March 1, 1852, 4 p. m. Crossed the line twenty-six days out; passed St. Roque twenty-nine days out; thence twenty-nine days to 50 degrees south; twelve days from 50 to 50; was at latter point May 9, sixty-nine days out. May 4 was off the Horn, sixty-four days out. From 50 degrees to the line was twenty-three days, crossing June 1, ninety-one days out; thence to San Francisco nearly thirty-four days. Arrived July 4; passage, 124 days, during nearly all of which had had light or baffling winds. Had three skysails set for eighty-three days. Was within 1000 miles of San Francisco for twenty days.

She had very quick dispatch. Arrived July 4, she commenced discharging 6th and her cargo was all out in nine working days, no steam power being used. Taking in ballast and water, cleared 20th and sailed 21st, having been in port just thirteen working days. This was at the time unprecedented. She proceeded to sea under sail, directly from Pacific street wharf, the papers of the time giving a graphic description of the scene at the wharf. July 31, just ten days out, passed close to Honolulu, from whence came the report that with a fair wind, all sail set, she was going off towards China in fine style. Arrived at Whampoa September 6, a trifle under forty-six days' passage. Beat the clipper ship Sea Serpent which sailed with her, two days to Honolulu and nine days to China.

Sailed from Canton September 25, 1852, in company with clipper ship Sword Fish. Passed Anjer October 18 and cleared the Straits next day. Thence had thirty-three days to the Cape and arrived in New York December 30, in ninety-five days from China. The passage of the Sword Fish was ninety days. She had made her gain mostly in the run down the China Sea, though she beat the Stag Hound one day from Anjer home.

### Third Voyage

Left New York February 25, 1853. Crossed the line in twenty-one days, six hours; passed St. Roque twenty-three days; thence thirty days to 50 degrees south, and twelve days to 50 degrees in Pacific, which parallel crossed May 1, sixty-four days out. Had passed the Horn April 25, fifty-nine days out. Put into Cumberland Bay, Juan Fernandes, for water and was detained off Forland by gale from May 10 to 14. Left Juan Fernandes May 15; crossed the line June 5; thence twenty-six days to San Francisco, where anchored July 1, passage 126 days, net 122 days, of which had skysails set for eighty-one successive days. Had light winds nearly all passage.

Left July 16; passed Honolulu 29th; arrived at Hongkong September 13; passage, sixty-one days.

Sailed from Canton October 24; was at Anjer November 10; cleared the Straits 12; had twenty-nine days to the Cape; passed fifty-one days out, 30 degrees south, 12 degrees, 30 minutes east; thence nineteen days to the line; thence nineteen days to New York, arriving January 21, eighty-nine days from Canton, seventy days from Java Head.

### Fourth Voyage

Sailed from New York April 27, 1854; thirty-three days to the line; passed St. Roque thirty-six and one-fourth days; thence twenty-three to 50 degrees south; eight days between 50s; passed Horn June 28, sixty-two days out; crossed the line July 23, eighty-seven days (twenty days from 50 south); twenty-two days from line to port, arriving at San Francisco August 14, passage 110 days. Captain Behm still in command.

Left August 25 and arrived Hong Kong October 14, forty-nine days. Made a round trip to Manila, returning to Hong Kong December 19, 1854. Went to Shanghai, where loaded for London. Passed Anjer May 28, 1855; cleared the Straits next day; thence thirty and one-half days to the Cape. Arrived at London August 28, ninety-one days from Java Head.

### Fifth Voyage

Went from London to Hong Kong. Date of sailing not at hand. Arrived out March 11, 1856. Sailed from Canton April 21 and arrived at New York August 21, 1856; passage, 122 days.

### Sixth Voyage

Left Boston January 4, 1857, under command of Captain Peterson. Had eighteen days to the line; twenty-two days passed St. Roque; forty-three days passed the Horn in fine weather; crossed the line March 28, eighty-three days; carried the trades to 28 degrees north; was off San Francisco seven days in calms and light winds; arrived April 22, 1857, 108 days passage.

Sailed May 15; arrived at Hong Kong July 5, passage fifty days. Sailed from Foochow August 13 and arrived at New York December 4, 113 days.

### Seventh Voyage

Sailed from Boston February 6, 1858, under command of Captain Hussey. Crossed the line in eighteen days; passed through the Straits of Le Maire March 24, forty-six days out; passed Cape Horn 29, fifty-one days. From March 24 to April 20 experienced stormy weather, it being one continual gale, with high seas, hail, snow and rain, thunder and lightning. Crossed the equator May 14, ninety-six days out, after which had strong N. E. and N. N. E. winds. Arrived at San Francisco June 7, after a passage of 121 days. A newspaper statement was that one of her anchors showed a fluke bent up against the stock, hammered up by the force of the seas off Cape Horn.

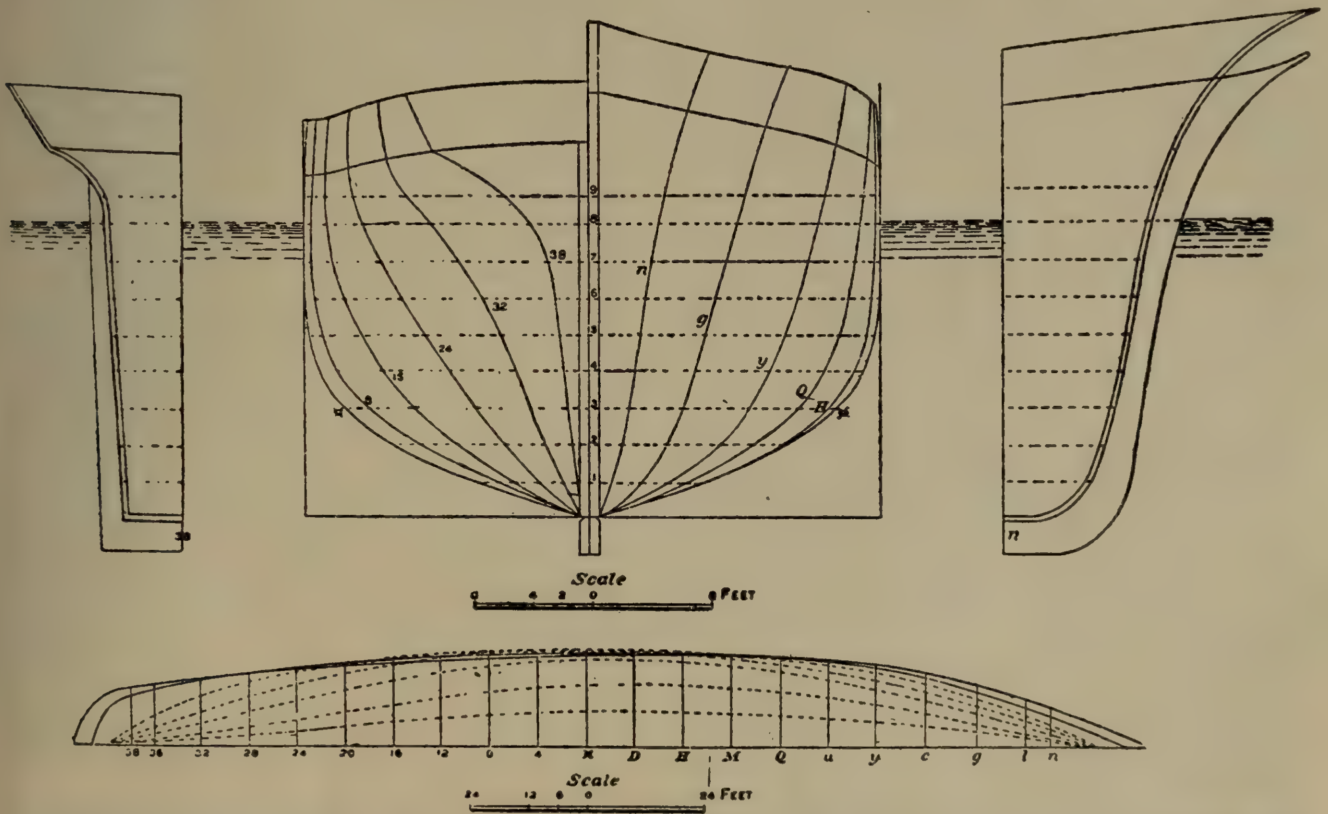
Sailed July 20 and arrived at Hong Kong September 17, fifty-eight days. She laid up there for a time and this was her last appearance in San Francisco. In March, 1861, under command of Captain Lowber she crossed over from New York to London.

On August 2, 1861, she left Sunderland, England, with a cargo of coal for San Francisco, under command of Captain Wilson. Was fifteen days beating down the Channel against head winds. Then had fair winds and pleasant weather until October 12, when was about 45 miles south of Pernambuco. On that date at 1 a. m., in First Mate E. S. Goodwin's watch, the ship was discovered on fire. All hands were called, courses hauled up, head yards hove aback and every endeavor used to keep fire under until boats could be gotten out. At 4 p. m. had four boats out and saved what few things possible in the hurry. At 5 p. m. left the ship and soon after the fire broke out fore and aft and burned so rapidly that in one hour the masts went over the side and the ship was burned nearly to the water's edge. At 6 p. m. boats started for Pernambuco, where they arrived the morning of October 13.

### Some Comparisons

An authority in Hunt's Merchant's Magazine, June, 1853, said of the Stag Hound: "She is probably the prettiest ship as regards model for speed that McKay ever turned out. Though not yet showing up signally, still time will, we predict, give her the supremacy of clippers." She had slightly convex water lines; Flying Cloud and Staffordshire had but 30 inches dead rise, concave water lines and sharper though shorter ends than Stag Hound. The memoranda of the different voyages of the latter show that generally she had but a poor chance to appear in any particularly favorable light as to speed, but in moderate breezes she was conceded to be a fast ship, while in good breezes and strong winds she frequently logged sixteen and seventeen knots. Captain Richardson, who had her on her maiden voyage, afterwards took the new clipper Staffordshire, also a McKay production, and had the following remarkable runs: Boston to San Francisco, 101 days; hence 55 days to Singapore and 82 days Calcutta to Boston, the fastest trip by five days up to that time. Captain Richardson, commenting on these runs and noting the ease with which Staffordshire ran fifteen knots under topgallants, yet acknowledged that Stag Hound was much the faster vessel. (Captain Richardson was lost with the Staffordshire on Blonde Rock, off Cape Sable, December 30, 1853, when 180 persons were drowned.)

So far as can be traced through official sources, the Stag Hound's best speed was slightly over 17 knots and her best day's run 358 knots. The published reports that she ran from Boston Light to the line in thirteen days are not correct, her best time being eighteen days, in two instances.



Frame and body lines of the Stag Hound. Note the very sharp entrance at the bow, the long, slow curves of the after underwater body, and the very abrupt dead rise. The Stag Hound was one of the most extreme clippers ever built.

# MARINE ENGINEERING

## Some Historical Notes On Steam Navigation

By R. J. ALEXANDER

**During the past few months numerous requests have come from readers for an article or series of articles on marine engineering from a historical standpoint, articles that would show the early development and operation of steamers on the ocean trade and passenger routes, that would give us the same perspective on the old steamers that the articles of Mr. F. C. Matthews give us on the sailing ships.**

**Pursuant to these requests, we some time since arranged with Mr. R. J. Alexander, a retired marine engineer possessed of a ready pen, to write for us such a series. Mr. Alexander has been a voluminous correspondent of Pacific Marine Review in the past, both in signed articles and anonymously. He loves an argument and cordially invites any reader to take issue with any of his statements. So, dear readers of P. M. R., if you see anything out of the way in the coming series, it's up to you. We expect to "call" Alexander ourselves quite frequently before the series is over.**

**EDITOR.**

MARINE engineering, so far as any modern application of that term is concerned, dates back a little over 200 years, and it is rather significant, taking into consideration the facts outlined in my article on "Safety on Shipboard" in Pacific Marine Review for January, 1922, that this history of marine engineering should start with the invention of the safety valve.

### The First Safety Valve

About the year 1690 A. D. one Denys Papin, a French Huguenot and a physicist of parts, in studying the problem of making more wholesome and palatable the tough horse or beef which was then the source of energy for the rank and file of the European population, evolved what has ever since been known in physical laboratories as Papin's digester. Made of aluminum, this identical invention is today being advertised and sold as the "New Era Pressure Cooker," which of course is perfectly all right, because if it was advertised as Papin's digester, invented in the seventeenth century, no modern housewife would think of buying it. To the success of this digester a safety valve was essential and so Papin, ever a man of resolution, designed the necessary article practically as we have it today.

Papin was singularly unfortunate in his contacts with the ignorance and prejudice of rulers and peasants alike. Driven out of France by the revocation of the Edict of Nantes in 1685, he took refuge with the Landgrave of Hesse and for several years was professor of mathematics at the University of Marburgh. In 1690 he published a very clear description of the fire or atmospheric engine and suggested the practicability of applying the power of steam to the navigation of rivers. In another volume dated 1695 he proposes to apply this power through "rotary oars." Oars fastened to axles and turned by a horse-driven treadmill had already been used to propel boats on the Hessian rivers and canals.

Papin labored on this application of steam for years at Hanau, and finally at Cassel on the river Fulda his boat was launched and he succeeded in propelling it by steam against the current. The ancient order of river boatmen immediately got busy and began to ridicule the new invention, rowed all around it, jostled it out of the fairway; in fact, displayed far greater activity in heaping scorn and abuse on poor Denys than they had ever shown in honest work. Disgusted with the Hessians, he determined to take his boat and himself away from those parts and steamed down the Fulda, intending to get clear away and crossing the North Sea, finally reach London. At Munden, about forty miles down stream, he was waylaid by the river boatmen and had difficulty escaping with his life, boat and engine being utterly destroyed. He finally reached London and died there in 1710, not having the heart to try another boat.

I might pause here to moralize on the tendency of labor to act hastily to its own disadvantage in condemning new machinery, but will refrain and get on with the subject in hand.

Undoubtedly this boat of Papin's was the first vessel propelled by steam power. Papin, however, was not the first man to suggest this use of steam power.

It has often been asserted as a fact that at Barcelona, Spain, on June 17, 1543, one Blasco de Garray with a "cauldron of boiling water and a movable wheel suspended on each side of the vessel" propelled and maneuvered in the harbor a ship of over 200 tons burden. Strict investigation of state records by reliable engineers has shown that this story lacked the steam to "put it over." Blasco de Garray moved his paddle wheels by man power. His cauldron was for preparing fuel for his human engines.

Again in 1630 one David Ramseye obtained a patent from Charles I of England for an atmospheric engine, one of the specifications "to make boats, shippes, and barges to go against strong wind and tide."

In 1640 Solomon de Carrs, a native of Normandy, came to Paris with the idea of presenting to the king a memoir on the use of steam for navigating ships, moving carriages, lifting water, and other purposes. Cardinal Richelieu, then in power, would not listen to this man's story. Solomon, however, insisted on following the cardinal and trying to force the story upon him, whereupon Richelieu ordered him imprisoned in the madhouse. A letter written by Marian Delorme in Paris, February, 1641, tells of a visit made by the Marquis of Worcester (himself well versed in the then art of engineering) to this man at the madhouse and of the Englishman's "ridiculous idea" that De Carrs when first imprisoned there had been the "greatest genius of the age."

### The First Idea of a Tug

In the little village of Camden, Gloucestershire, England, there is still sung a street ditty or doggerel which runs something like this:

"Jonathan Hulls with his patent skulls
Invented a machine to go against wind and stream,

But he, being an ass, couldn't bring it to pass
And so was ashamed to be seen."

The hero of this ballad in 1736 took out a patent under Queen Caroline of England for a "machine for carrying ships and vessels out of or into any harbor or river against wind and tide." The following year in a little pamphlet published in London he describes this invention, and it is plainly evident that what he had in mind was a stern wheel towboat driven by the ordinary atmospheric steam engine as then developed. Scott Russell in the Encyclopedia Brittanica maintains that Jonathan Hulls not only made a working model of this invention but that he actually constructed and used such a towboat, and many British authorities claim for Jonathan Hulls the first practical application of steam to the propulsion of boats. Be that as it may, he, like his predecessor, Papin, died in broken-hearted obscurity in the slums of London, leaving no practical demonstration of his work.

All through the middle of the eighteenth century there were many plans for steam propulsion of vessels put on paper. In 1775 a Frenchman by the name of Perrier constructed a small steamboat but was unable to drive her up stream against the current of the Seine.

The most ambitious work undertaken prior to the year 1800 was that of the Marquis De Jouffroy, who in 1781 built a steam vessel 140 feet long and 20 feet beam on the Saone River, France. The experiments on the operation of this large steamer were stopped by the French Revolution. Its chief interest lies in the fact that in the great Patent Office Library in London and also in the Louvre, Paris, the plans for this steamboat, which had paddle wheels on a single shaft turned by a crank rod from the piston of a single horizontal steam cylinder, were open to inspection and were probably inspected by Fulton and that from them he got his ideas for the Claremont.

In 1784 and 1785 Mr. James Rumsey constructed a boat which was propelled by steam on the Potomac, the boiler and machinery for the boat having been made at the Catoctin Iron Furnace in Frederick county, Virginia. Rumsey after one trial, which was said to have been fairly successful, sailed for England, hoping in that older and richer country to perfect his work and realize upon it, but died there before completing and satisfactorily demonstrating anything in the way of a steamboat.

Letters written by Rumsey accuse John Fitch of stealing his ideas, and mention frequent visits to his London shop of a young American engineering student and artist named Robert Fulton. John Fitch of Philadelphia in 1786 initiated the first stock steamboat company.

The years 1785 to 1790 were full of attempts to improve steam propulsion, both in the United States and in Great Britain. The company which had been originated by John Fitch built several steamboats in Philadelphia during these years. Finally in 1790 they achieved the then very remarkable result of eight miles an hour on trial speed on a measured mile. The boat which made this performance ran 80 miles a day on her regular schedule. She had no name, it being thought sufficiently distinctive to call her "The Steamboat." Her regular run was from Philadelphia to Burlington, Bristol, Bordentown, and Trenton, returning the next day. She ran all one summer, and it is estimated that she covered during that period between 2000 and 3000 miles. The company, however, was not able to make her pay and, having attempted another and larger steamboat intended for work on the Mississippi, the construction of which ran them into debt, both boats and all the machinery had to be sold by the sheriff and the company went out of business.

Two other American marine engineers of this period deserve special mention. Nathan Read of Salem constructed and patented a vertical tubular boiler and an improved steam engine to be used as "a practical mode of driving or impelling boats or vessels of any kind in the water." Read experimented with paddle wheels. Congress after his petition for letters patent passed an act to promote the progress of the useful arts, which included the first patent law of the United States. It is very significant that the first four patents issued under this law, all under date of August 26, 1791, were to the names Read, Fitch, Rumsey and Stevens, and that every one of them had to do with the application of steam to marine propulsion.

John C. Stevens of Hoboken, New Jersey, might be singled out as the real marine engineer of this period in America's progress in steam navigation. He made a very careful study of the theory and practice of the steam engine, beginning about 1790. He produced the first rotatory engine but gave this up for one of Watt's make. We shall have occasion to refer later to the work of Mr. Stevens, which extended well into the nineteenth century.

In the meantime in 1789 there had been carried out at Dumferline, Scotland, some very interesting experiments with steam propulsion under the guidance of William Symington and Patrick Millar. After a number of experiments these gentlemen demonstrated to their own satisfaction and that of competent observers that they could drive a steamer through the water at the rate of between seven and eight miles an hour.

We have simply touched on a few of the high spots of steam navigation in the eighteenth century. There were many curious and startling experiments made in trying to apply steam power to the propulsion of boats, but it is sufficient for our purposes to know that the ground work for what developed in the first half of the nineteenth century had all been laid. The only really important improvement in the last half of the eighteenth century was the invention of the condensing steam engine by James Watt. Practically every successful attempt to solve the mysteries of steam propulsion up to the year 1800 and for a considerable time thereafter was made with a Watt engine.

Having now arrived at 1800 with about four pounds steam pressure in our boilers and air pumps giving a vacuum of about fifteen inches, we may possibly have enough headway so that our next installment will take us through the first half of the nineteenth century.

Pacific Marine Review
The National Magazine of Shipping

576 Sacramento Street
SAN FRANCISCO, CALIFORNIA U. S. A.

Official Organ of the Pacific American Steamship Association

Subscription Price, per year (Domestic) . . . . . . . $2.00
(Foreign) . . . . . . $3.00
Single Copies . . . . . . . . . . . . . . . 25 cts

J. S. HINES . . . . . . . . . . Publisher
B. N. DeROCHIE . . . . . . . Business Manager
A. J. DICKIE . . . . . . . . . . Editor
ANDREW FARRELL . . . . . . Associate Editor
M. G. HEDIN . . . . . Advertising Representative

NEW YORK OFFICE
339 at 30 Church Street
F. H. BEHRENS, Manager

Pacific Marine Review is sold at all leading News Stands
Entered as second class mail matter at Postoffice
San Francisco, California

Published on the First of Each Month. Copyright
1922 in the United States by J. S. HINES

## SUBSIDY

WE had hoped editorially this month to analyze for our readers President Harding's plan for ship subsidy, but as we go to press the President is not yet ready to make formal announcement. We know and are very glad that some constructive plan is forthcoming for the benefit of America's merchant marine. There are many differences of opinion as to what form this assistance should take, but all are agreed that assistance is necessary. In the absence of the administration plan, we present herewith the American Steamship Owners' plan.

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## AMERICAN STEAMSHIP OWNERS' PLAN

### Report of Committee on Bare Boat Charter and National Constructive Shipping Policies, as Presented to American Merchant Marine Joint Committee

BY direction of the executive committee of the American Steamship Owners' Association a special committee of the association has been authorized to secure the views of the practical men of the shipping industry as to what national constructive policies are preferred by them, to make this industry prosperous and permanent. It can be assumed at the outset that American ship owners have been doing, and will continue to do, everything possible by their own exertions to reduce overhead and operating expense, to enhance the efficiency of their tonnage, and to prepare in every proper way for the years of severe competition on the high seas, which all know are most certainly impending. No national aid will avail without the utmost energy and persistence on the part of the shipping men themselves, who must after all work out their own success when once assured of a fair and equal opportunity.

From the specific replies received to a comprehensive questionnaire sent to every American ocean shipowning company included in the American Steamship Owners' Association, the special committee authorized to receive and consider these expert opinions has derived these definite recommendations:

1. Sell the Shipping Board steel built cargo tonnage to private purchasers at a basic price not exceeding $35 a deadweight ton.
2. Have an impartial expert board make a survey of every steel ship at time of sale and fix an exact price at or below the basic price, dependent on the character of the ship, her age and equipment.
3. The ships must be sold guaranteed absolute freedom from governmental competition, and free to be employed in any trade.
4. American citizens should be given preference in purchase.
5. Both steel ships finally unsalable and wooden ships should be broken up or used as storage hulks or breakwaters.
6. High war and post-war prices of Shipping Board steamers sold to private purchasers should be readjusted on a fair basis by the government. High war and post-war prices of ships built for private owners or bought from others than the Shipping Board should be readjusted through liberal allowance for depreciation in tax returns. This must be done, for no measure of national assistance can be made to cover artificial and excessive capital costs.
7. Replies to the questionnaire re the adoption of the bare boat charter drawn up by the association show that if the government continued to operate its own vessels, this association's form of charter should be adopted. This committee does not recommend the policy of chartering the government-owned vessels in any form, because of competition thus occasioned with the privately-owned vessels, and unfairness in outside charterers thus going into trades operated by the old-established United States shipping companies. In the opinion of the committee a continued chartering policy will defeat the proposed sale policy as defined by the Jones Act.
8. The recommendations of the Shipping Board committee authorized two years ago to revise the navigation laws and rules of the United States, including the La Follette seamen's law, should be immediately approved and enacted.
9. Section 7 of the Jones law instructing the Shipping Board to establish regular steamship services that may be essential to American commerce, and sustain them until taken over by private enterprise, should be enforced on routes where such services are lacking, but in any case where responsible private owners undertake such services the Shipping Board should withdraw its service.
10. Section 11 of the Jones law authorizing the expenditure of $25,000,000 of Shipping Board revenue yearly as a construction loan fund for building ships for such services—one-third of the cost of these ships to be private capital—should be enforced to aid the building of special or passenger types of steamers which may now be lacking. If funds are not forthcoming from the sources defined in Section 7, these funds should be provided in some other way.
11. Section 21 of the Jones law, extending the coastwise laws to the Philippines and other insular territories or possessions not already covered by them, should be applied on or after February 1, 1922, as the Jones law provides, wherever adequate services have been established by the Shipping Board—these services to be turned over ultimately to private enterprise.
12. Section 23 of the Jones law, exempting from ex-

cess profits taxation American ships engaged in foreign trade, with an amendment that the full amount of the excess profits taxes be applied to the required construction of new ships in American yards, should immediately be made effective.

13. Section 24 of the Jones law requiring the carriage of ocean mails of the United States in American vessels wherever practicable, should be promptly enforced.

14. Section 28 of the Jones law reserving to American ships the sea carriage of imports and exports and of passengers conveyed at low preferential through rates on American railroads should be enforced, after these rates have been carefully revised and reconstructed if need be so that there may be equitable treatment for all sections and ports of the United States.

15. Further legislation should be enacted by Congress through naval retainer pay or its equivalent to compensate for the higher wage and maintenance costs of American ships remaining after a thorough revision of the navigation laws and rules of the United States. No changes in these laws and rules, though they ought immediately to be ordered, can of themselves give American ships a fair chance in ocean commerce. There must be national assistance, prompt and liberal. The ocean shipping industry is the most intensely competitive of all industries, and it is a course of national folly and disaster to leave this longer the only interest absolutely unprotected by the government. It is the greater folly and disaster because the government-owned ships, though idle, require in the hands of the government an organization to administer them, and are meanwhile accumulating a depreciation charge far heavier than they would incur if well cared for in actual use. To compensate shipowners for the difference between American and foreign wages and living standards would cost far less in the long run than even the present reduced rate of Shipping Board expenditures. The national treasury would benefit greatly by the change.

### Recommendations of Committee

These recommendations as above stated represent the views of American shipowners as communicated to the American Steamship Owners' Association. We, therefore, present these recommendations as genuine constructive policies for the permanent upbuilding of the merchant marine and naval reserve of the United States.

Ocean-going tonnage of the American merchant marine on December 1, 1921, consisted of 1952 vessels of 5,463,951 gross tons owned by individuals, firms or corporations, and 1786 vessels of 8,001,118 tons owned by the United States Shipping Board. When the wooden craft and other unfit or uneconomical war-built vessels are eliminated, it is probable that the privately-owned and government-owned merchant fleets will be substantially equal, and that the total effective sea-going shipping of this country will be of about 10,000,000 tons, of which three-fifths will be available for the needs of overseas or international commerce.

With the coastwise shipping and the inefficient elements thus separated, the American overseas fleet will be one-third as great as the total merchant marine of the United Kingdom, and double the fleet of France or Japan. It will contain relatively more new tonnage than the shipping of any other nation, and far more oil-burning steamers. Thus the new American merchant marine is potentially of very large importance.

Six or seven million tons gross register of merchant shipping should suffice to convey between 50 and 60 per cent of the imports and exports of this country. There is need in addition of a considerable number of passenger and cargo liners to provide a swift postal and passenger service, in which we are now most deficient. Therefore, there must be very soon a substantial amount of new construction of liners and special types, though the cargo ships available are now in adequate supply. In view of the fact that Asia (except Japan), Africa and South America possess little shipping of their own, it is natural and right that ultimately two-thirds of our entire commerce should be carried under the American flag, instead of the less than one-tenth of the years before 1914. This is a just, reasonable aspiration for the American people and their government, which can be gainsaid by no other nation of the world.

To achieve such a result and to fulfill the purpose of the Merchant Marine Act of 1920, passed by Congress without party or sectional division, the government-owned ships must be sold to private capital and enterprise "as soon as practicable." We record our profound conviction that none of these ships can be disposed of unless and until adequate protection and encouragement are provided to the ship owners who must operate these vessels in competition with the low wage and living standards and the subsidies and bounties of other governments.

This problem of the merchant marine is one that will imperatively press for final settlement. Conditions are such that it cannot possibly be evaded. Nearly four billion dollars of the money of our people, the proceeds of Liberty bonds, were invested with inescapable haste and loss, in a merchant shipping which we had to have, in a supreme national emergency. The good ships of this national fleet are potentially the most valuable asset which the great war has left to us. At present they are not an asset but a liability, and they will most assuredly continue as such until the national lawmakers, by authorizing the expenditure of a fraction of the cost of maintaining these ships in idleness, make them active and profitable carriers in the hands of men trained to their operation and dependent upon their own efforts for their livelihood.

An enlightened policy of national aid resolutely adhered to through the years has won for the United States world-primacy in manufacturing. A like policy can win the same result for the merchant marine.

J. R. Gordon, chairman, Union Sulphur Company; Ernest M. Bull, A. H. Bull Steamship Company; James Donald, States Marine & Commercial Company, Inc.; Hugh Gallagher, Pacific Steamship Company; Robert F. Hand, Standard Oil Company of New Jersey; Edgar F. Luckenbach, Luckenbach Steamship Company, Inc.; E. J. McCormack, Moore & McCormack Company, Inc.; Eugene E. O'Donnell, C. H. Sprague & Son; Alfred Gilbert Smith, New York & Cuba Mail Steamship Company; Oakley Wood, Barber Steamship Lines, Inc. —Committee on Bare Boat Charter and National Constructive Shipping Policies.

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## FREIGHTED WITH MERCY

THE good steamship Kentuckian of the United American Lines left San Francisco February 28 bound for the port of Batoum on the Black Sea loaded with a cargo of foodstuffs and commodities contributed by the people of California and Washington to the famine sufferers of Russia and collected under the auspices of the Russian-Near East Relief.

California had been collecting foodstuffs and clothing for a special shipload to clear from San Francisco on April 6, but recently a cable was received from the famine areas urging the necessity of immediate action, and so Judge Curtis D. Wilbur, state chairman of the Near East Relief, authorized this preliminary shipment of California commodities on hand. Consequently, there will appear on the manifest of the Kentuckian items like these: 50 tons of Sun Sweet Santa Clara prunes; 6 tons of California sardines put up at Santa Cruz; 30 tons of Fresno figs and peaches, and many others.

The work for the California shipment of April 6 will now be prosecuted with greater energy and thousands of tons of foodstuffs and clothing will be shipped at that time.

The Kentuckian will spread between her cargo masts a 20-foot banner bearing the inscription, "To the starving Russians, from Seattle, Washington; Los Angeles and the counties of Northern California."

We bid this ship Godspeed on her voyage of mercy. She bears succor from the newest race of men to those ancient peoples who dwell under the shadow of Mount Ararat in the very cradle of the human race. Therefore be good to her, O Ocean, and speed her on the journey with gentle breezes and calm seas; so shall the babes of Tiflis bless thee and the old men of Erivan speak forth thy praise, for that thou didst make smooth the path of needed sustenance coming from out the West.

## FOREIGN TRADE CONVENTION

A FEW of the many vital subjects that will be discussed at the Ninth National Foreign Trade Convention, to be held in Philadelphia May 10, 11 and 12, have just been announced.

The financing and expansion of foreign trade will be studied from every point of view by the leaders in commerce, industry and finance who will be at this convention. They will seek the solution of the problems of unemployment and the stagnation of business. One of the principal topics of the first day's meeting will be "A foreign loan policy that will enable our idle factories to get to work." The condition of manufacturing is reflected by unemployment statistics. Information gathered by the federal government shows that about four million persons are now out of work. Millions of others are working only part of the time.

Idle ships are waiting on idle factories and idle hands. "The merchant marine, an international problem," is another of the major subjects that will be studied by this meeting of captains of the international workshops who will gather in Philadelphia, 5000 strong. Out of a fleet of nearly a thousand ships, the Shipping Board is operating today less than 350. The other 650 are lying idle in the harbors and waterways of New York, Philadelphia, Boston, San Francisco and the other seaports along the coasts. In addition to these are hundreds of other vessels, steam and sail, not government-owned, that are also out of work. The ocean freight markets of the world today are probably in a more depressed condition than ever has been known because there are so few ladings for the delivery wagons of the sea.

Another interesting transportation topic will be "Inland waterways as developers of traffic." By water and by rail the freight moves to the sea gates to fill the waiting ships. The commercial facilities of the natural waterways give the United States first rank among the nations of the world in this respect. Our artificial waterways are still undeveloped, as compared with the network of canals and canalized rivers that connects the manufacturing communities of northern Europe.

Money and credit are the lifeblood of commerce. This country has most of the world's gold. "A practical method of putting our surplus gold to work in financing foreign trade," the subject of another address, is therefore a particularly timely topic. It will be discussed from the standpoints of the farmer, the manufacturer, the cotton producer, and the foreign trade merchant.

Exporters are naturally of the opinion that banks should lend money freely and do more to increase the outward movement of goods and to hasten the expansion of foreign trade. The banks, on the other hand, seem to feel they should proceed with caution in foreign trade credits. These two ways of looking at the problem will make "The exporter's view of the present attitude of banks toward foreign trade," also "The bank's view"—two subjects of group discussion—especially interesting.

"The effect of high taxation on the exchanges," "The factor of depreciated currency in competition," and "Why we must have foreign trade," will be considered at one of the sessions. "Education for foreign trade," "Banking facilities for foreign trade," "Protection against exchange losses," and "Uniform commercial credit instruments" will be other topics.

"Ocean carriage" will be discussed from various angles; "Insurance," "The carrier's responsibility, from the viewpoints of the banker, shipper, underwriter and carrier," are the sub-divisions.

"Sales promotion" will be handled in the convention in co-operation with the American Manufacturers' Export Association. It will include discussions of the "Lessons of last year," "Bonded service as a selling argument," "The square deal through arbitration," and "Service as a sales promoter at home and abroad." Service at home includes service through exact fulfillment of sales contracts, shipments on time, according to sample, etc. Service abroad covers warehouses, branch houses, carrying stocks, machinery and specialty helps, etc. In this connection "Competitive conditions abroad" will also receive particular attention.

The poverty of other nations, the inflated currencies of some, the depreciated exchanges of others, are the principal financial obstacles in the way of foreign trade at present. "Factors that will help the exchange situation," therefore, is a subject that should be of utmost interest to every one. In the same session of the convention "Meeting preferential tariffs" and "A foreign trade policy for Americans" will also be discussed.

Since the enactment of the Webb law there have been many combinations for foreign trade. Those attending the convention will be told how the Webb law works, and the advantages of combinations for export. This will be especially interesting to smaller manufacturers, as it will show them the existing opportunity for them to meet present conditions.

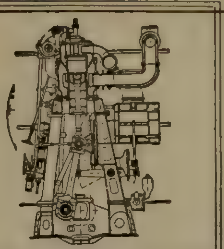
"Export advertising" will be handled in co-operation with the Association of National Advertisers, and will include the topics of "Sales promotion through advertising" and "The use of dealers' helps."

The National Association of Credit Men will assist in a thorough discussion of the subject of "Credit and credit information," upon which foreign trade so vitally depends.

The Trade Adviser Service will be an outstanding feature of the convention. There will be a hundred men, thoroughly experienced in export trade, representing different lines of endeavor in different parts of the country. They can be consulted by any of the delegates to the convention, and no request for information will be left unanswered.

The Bureau of Foreign and Domestic Commerce will send to the convention as many of its representatives as possible.

# Oil Engines and Motorships



## ENGINE ROOM MACHINERY OF NEW MOTORSHIPS

IN Pacific Marine Review for January, 1922, we published an article giving a general description of the new motorships Californian and Missourian. Herewith we offer a more detailed description together with general arrangement plans of the engine room machinery. These two fine motorships, the first privately owned, first class seagoing, general cargo motorships above 6000 tons to be built in America, are being outfitted at the William Cramp & Sons Ship & Engine Building Company. Cramp's have always been in the very forefront of steam marine engineering developments in America, and in building and installing the propelling machinery of these two ships they step right out in front in the American development of Diesel propulsion.

The motors and generators within the engine room were supplied by the Diehl Electric Manufacturing Company to special requirements. The motors for driving pumps have ball bearings and are totally enclosed. The machinery has all been built to conform to the requirements of Lloyd's Register of Shipping.

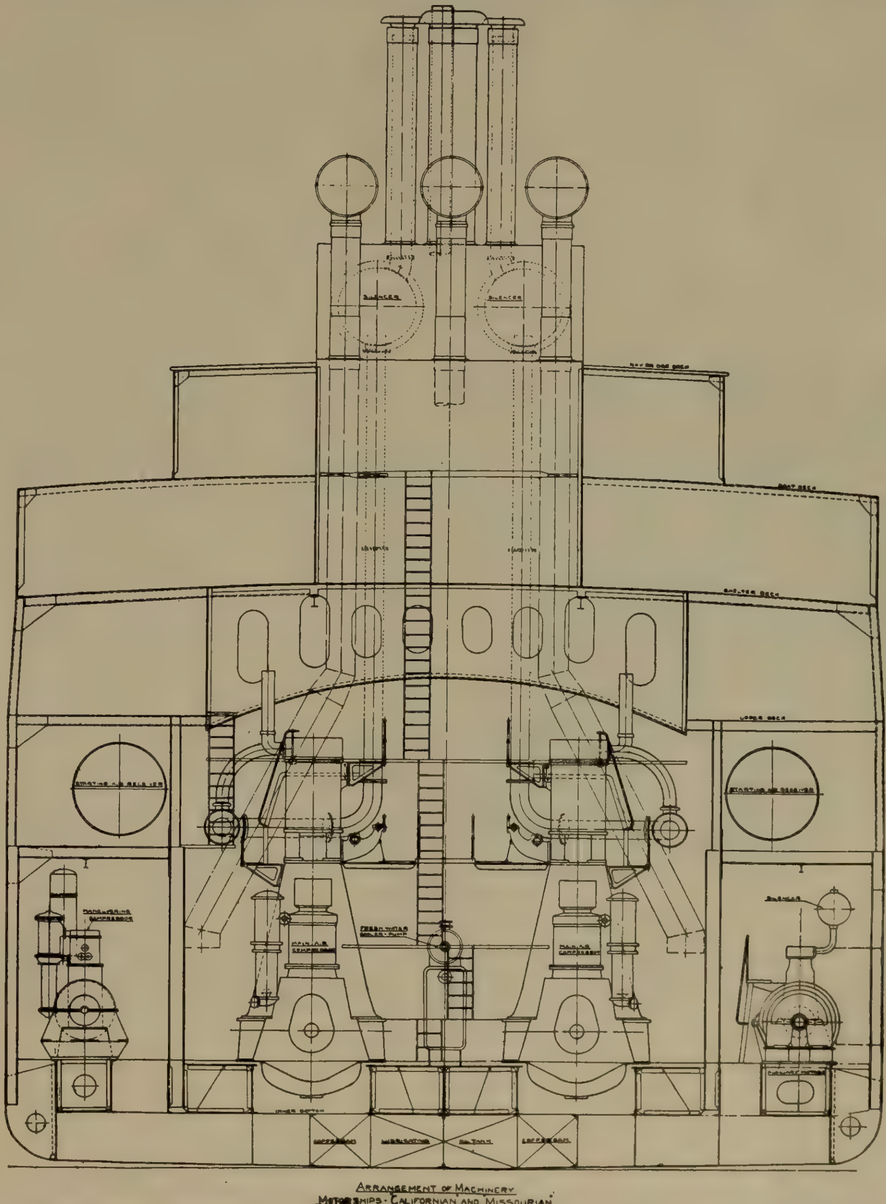
The main engines consist of two Cramp-B. & W. four-cycle marine Diesel engines, being of the crosshead type and having six cylinders each, with a bore of 29⅛ inches and stroke of 45¼ inches. Each engine is capable of developing continuously 2250 I. H. P. when turning 115 R. P. M. They are of the enclosed type and arranged for forced lubrication throughout. To the forward end of each engine is fitted a three-stage compressor for supplying injection air of 850 pounds pressure.

Owing to the demands for power by the large number of deck winches four auxiliary engines are installed of the typical B. & W. four-cycle design, having two cylinders each. They are rated as 100 B. H. P. each, and direct connected to 65 kilowatt direct current generators running at 300 R. P. M.

The general arrangement of the machinery is shown on the accompanying plans.

### Cooling Water

Three centrifugal cooling water pumps, arranged along the forward end of engine room, supply salt water cooling to main and auxiliary engines and maneuvering compressor, one being usually all that is required, with the other two as standby. The water to the main engines divides on passing through the jackets of the compressors, part



Cross sectional elevation showing arrangement of engine room machinery on the motorships Californian and Missourian going to cooling the thrust bearings, guides and pistons, and part to the fresh water cooler, from which it is discharged overboard by way of the jackets surrounding the exhaust manifolds. A fresh water closed cooling system is employed for the main engine jackets and cylinder covers, and the same arrangement has been recently adopted for the deep draft vessels to guard against getting mud or sand into the system when navigating in rivers or passing through shallow waters. The circulating pump for circulating the fresh cooling water is located on top of the fresh water cooler.

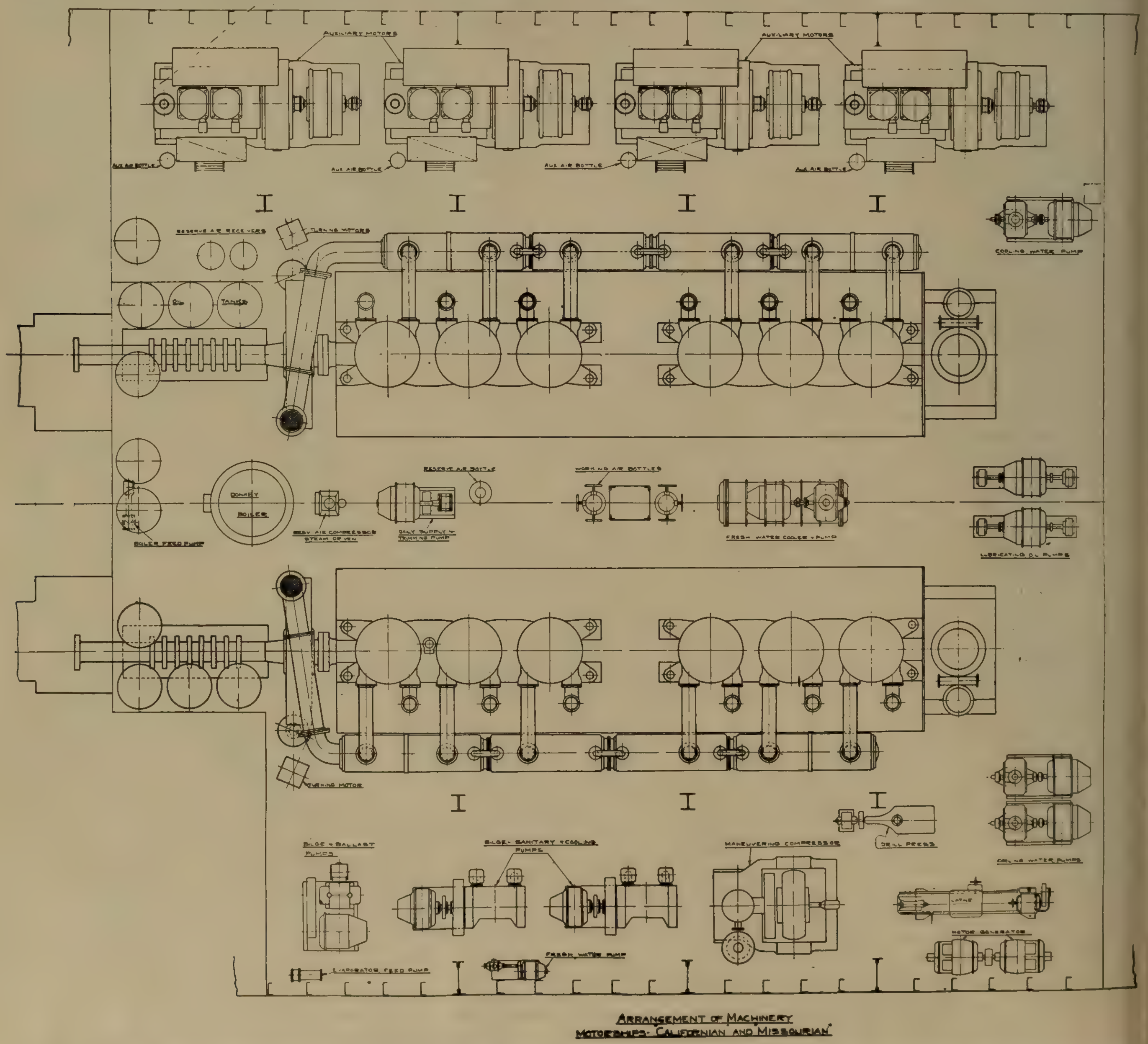
### Lubricating Oil

Two sets of lubricating oil pumps are provided for supplying oil under pressure to the main engines, with one set being in operation at a time. Each consists of two gear type pumps, driven by a common motor, and so arranged that each supplies oil independently to one of the engines. The oil drains from the main engines to two separate settling tanks, built into the double bottom of ship, and from which the pumps draw, discharging through strainers to the pressure lubricating systems.

A fuel oil transfer pump, also of gear type, is used for general oil transfer purposes and for pumping up the daily supply tanks. These latter, which in addition act as settling tanks, are placed on a platform on forward engine room bulkhead and of sufficient capacity each for twolve hours' running. The small tank is for holding a lighter grade of oil for starting up and closing down the auxiliary engines should the main supply be fairly heavy.

A two-stage air compressor, driven by a 120 horsepower motor and operated when maneuvering is to be done, delivers air at 350 pounds pressure to the starting air receivers located on port and starboard sides. This compressor also takes the place of a reserve compressor should one of the main engine compressors be out of commission. In such an event the high pressure cylinder of the main engine compressor not disabled draws air from the starting air system and supplies injection air to both engines. The usual loss in maneuvering air when at sea is made up by air taken from the main engine compressors. There is also a small steam driven compressor for pumping up one of the auxiliary engine air bottles when the vessel is new, or should all air on board be lost accidentally.

Two three-throw plunger pumps



Plan of engine room of motorships Californian and Missourian showing arrangement of propelling machinery and of all auxiliaries in the engine room are for sanitary and fire, general bilge service, and for removing the piston cooling water which is dropped into a well in engine bilge after being discharged from pistons. One pump is kept as spare, except in case of fire, when both are employed. The ballast pump is of the wing type, with a capacity of 150 tons per hour.

### Donkey Boiler

A small donkey boiler of the fire tube type, and 400 square feet of heating surface, located in thrust recess, is for furnishing steam for heating to the small reserve compressor, and for fire extinguishing purposes. A $CO_2$ smothering system is also installed, and arranged to work in common with the steam system.

A motor generator set of 20 kilowatt capacity changes the 220 volts to 110 volts for lighting purposes. A 15 kilowatt kerosene engine driven lighting set is installed on main deck as a reserve lighting set, and for operating in port, when it is desired to close down the engine room completely.

Provision is made in the silencer house for heating salt and fresh water for sanitary purposes from exhaust gases.

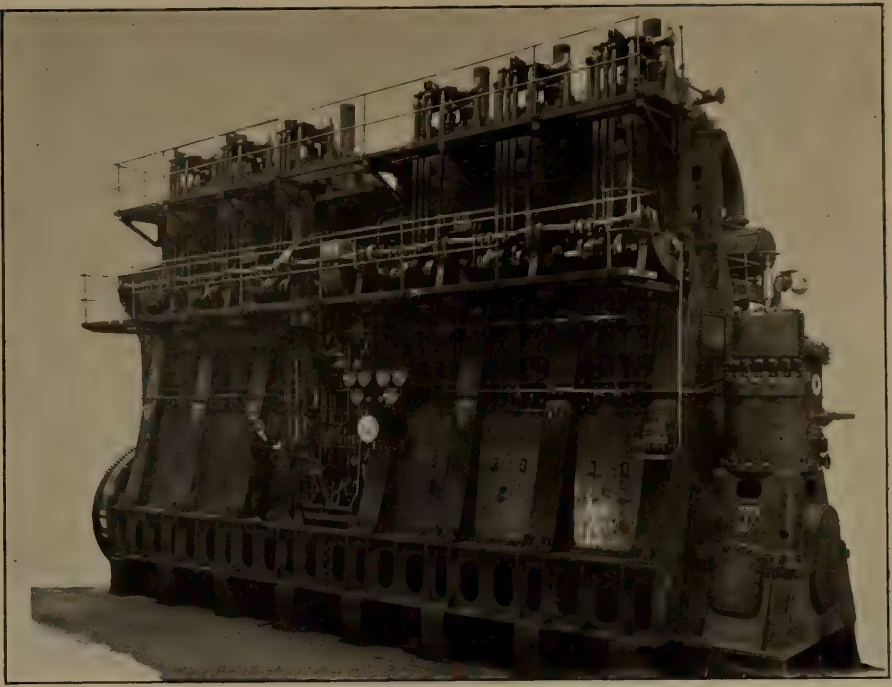
### Weight of Machinery

The total weight of the two main engines with flywheel, attached piping, grating and exhaust manifolds, is 543 tons, and the total weight of machinery within engine room, including shafting, etc., and deck silencers, with water, but excluding hull engineering piping, etc., is 932 tons.

The contract speed of the vessels is 11.5 knots, loaded, though it is anticipated 12 knots will easily be made, and which is to be assumed from the performance of similar sized foreign vessels having similar block coefficients and the same size engines.

The excellent reports that are being received from the Shipping Board vessel M.S. William Penn is an indication what the owners of the motorships Californian and Missourian may expect from these vessels when in service.

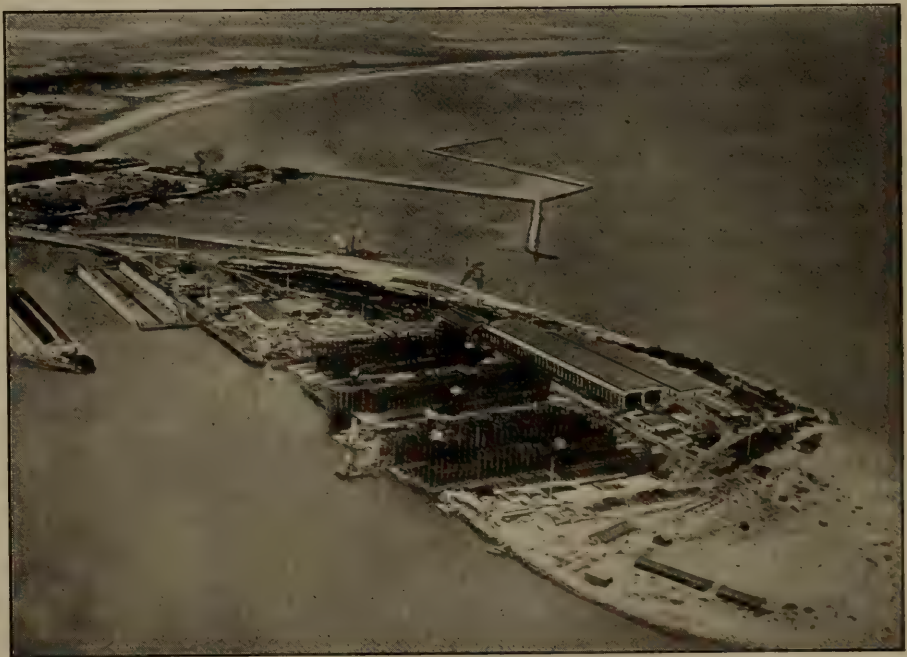
The motorship William Penn left New York on her maiden voyage on September 3, 1921, for the Far East, by way of the Panama Canal, under charter to the Barber Steamship Lines, and has discharged her cargo in the East and loaded again for English and German ports, via Suez Canal, whence she will return to New York, thus circumnavigating the globe on her first trip.



One of the 2250 I. H. P. Burmeister & Wain marine type Diesels built by the William Cramp & Sons Ship & Engine Building Company and installed by them on the motorships Californian and Missourian

The captain is most enthusiastic about her showing, the oil consumption averaging slightly less than 13 tons per day; and the engineer's records, forwarded from Manila, show that there has been no expenditures for repairs for main and auxiliary machinery.

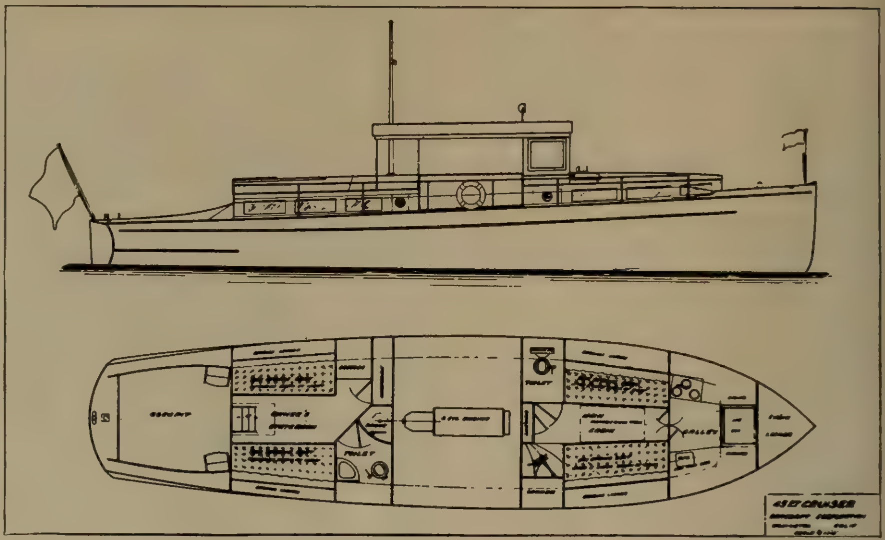
# Bethlehem's San Pedro Works



**The above aeroplane view shows very clearly the location of the new San Pedro Works of the Union Plant of the Bethlehem Shipbuilding Corporation, Ltd. Note the 12,000-ton floating drydock in the left center and the strategic site with deep water on two sides. The shops and yards of this plant are equipped with every modern convenience to facilitate hull and engine repairs.**

# BUSY SOUTHERN BOAT YARD

AT Wilmington on the Los Angeles inner harbor under the management of H. O. Shuster the Seacraft Corporation is busily engaged in building a number of small and medium speed boats and cruisers. They are being built to more or less standard designs, anticipating the removal of the luxury tax on boats of this description and in the hope that the keen interest now being taken on Southern California waters in speed boat racing will provide a ready market.



Forty-five-foot cruiser designed and built by the Seacraft Corporation

We are glad to be able to illustrate herewith three of the types of boats building.

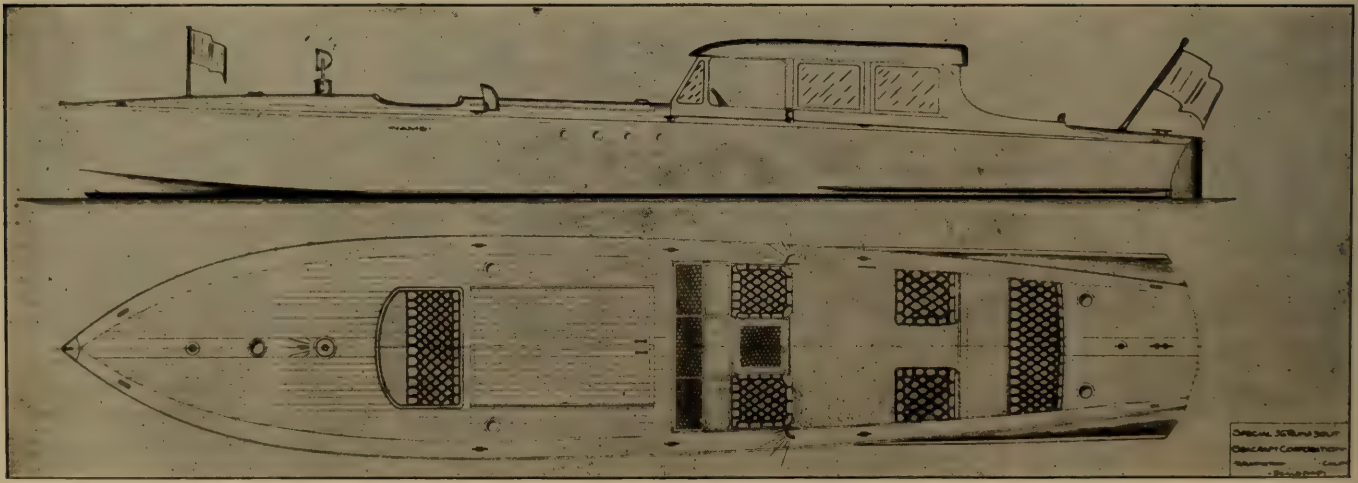
The Seacraft Corporation is stressing for quantity production a 26-foot type of runabout speed boat, of which they have three now on the ways and are planning to build ten or more immediately with the idea that by having a number of boats in the one class with the same power there will be a very lively competition in racing.

These boats are especially designed to take the 100 horsepower Hall-Scott aeroplane engines which have recently been offered at salvage prices by the Federal government. Well built of oak framing and keel, with cedar planking and with carefully designed lines, it is confidently anticipated that with these engines installed the boats will make thirty-five miles an hour or better. On account of the reasonable prices of engines, the boats will be comparatively inexpensive. They are built to accommodate seven people and with standard fuel tank equipment having a capacity for fifty gallons of gasoline.

For those desiring more individuality Seacraft Corporation is offering a sedan, V-bottomed runabout, 36 feet long and 7 feet beam, with accommodations for eight people. Two of these boats are building now. One is to be equipped with a 12-cylinder, 300-horsepower Renault aeroplane engine converted for marine work; the other with a 6-cylinder, 200-horsepower Hall-Scott marine engine. With the former power plant it is expected that forty miles per hour and with the latter thirty-five will be easily obtained. Entire control of the engine, steering gear, etc., is centralized in the front of the after cockpit, which is arranged with practically a standard automobile sedan top. These boats are built with solid oak frames and keels and are double planked throughout. Finished in solid mahogany trimmings, with nickel-plated hardware, they will have a very handsome appearance and will make an ideal runabout for coast work. The fuel tanks have a capacity for 100 gallons.

The Seacraft Corporation have built a large number of very fine craft for Pacific Coast owners, including a number of cup winners, among them the Miss Los Angeles, which recently won the Nordlinger cup race and is now champion of the Pacific Coast. The Rita Laura, a fine cruiser recently finished for Mr. Marco Hellman, is another product of which this yard is justly proud.

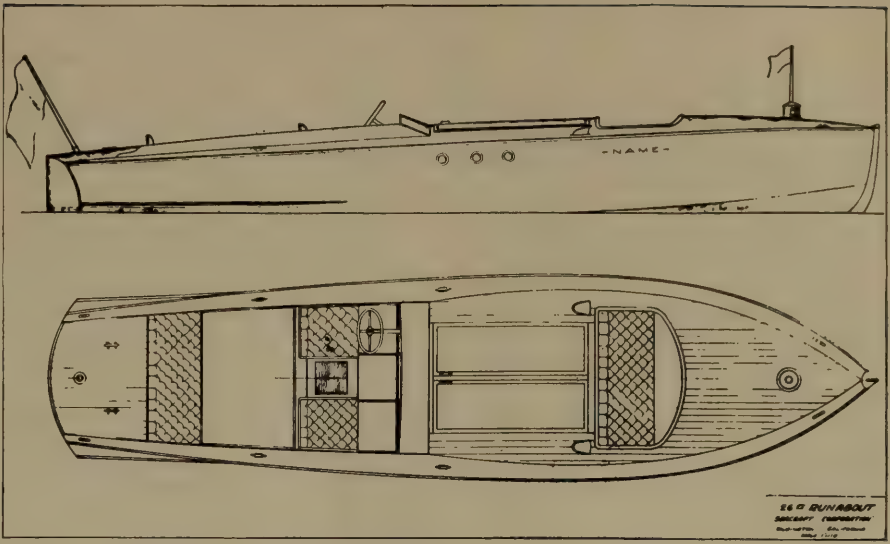
The largest boat on the stocks at the yard at the present time is a 45-foot cruiser. As will be seen in our illustration, this boat is designed primarily for sea-going qualities. Her trunk cabin has accommodations for ten people, four in the owner's stateroom aft, four in the main cabin forward, and two on the extension seats on the bridge deck. She is to be powered with a 6-cylinder Scripps 85-horsepower motor with 1000 to 1600 r. p. m. speed, which will drive the cruiser at approximately thirteen miles per hour.



Special 36-foot runabout designed and built by the Seacraft Corporation

The engine is located amidships under the bridge deck, which has a shelter finished in mahogany with clear-vision windows at the forward end and with the top extending the full length of the bridge deck. The seats on this deck are arranged with an extension device so that they can be pulled out and form berths for two men.

As will be seen from the plan, the sanitary arrangements are very complete. A large and commodious galley, properly fitted up with icebox and cooking facilities, occupies the forward compartment adjacent to the main cabin and dining room. Fuel storage is provided for 250 gallons and fresh water storage for 200 gallons.



Standard 26-foot runabout designed and built by the Seacraft Corporation

The Seacraft Corporation is well equipped for building boats of this character as well as fine sailing yachts and all classes of work boats. They are distributors for Southern California of the Hall-Scott, Speedway and Scripps engines and of the Paragon reverse gears.

# THE MUNARGO

## Latest Addition to the Munson Fleet

THE latest addition to the increasing fleet of the Munson Steamship Line is the passenger and cargo ship Munargo, recently completed at the plant of the New York Shipbuilding Corporation, Camden, New Jersey.

The Munargo is a strikingly handsome vessel, 414 feet long and 57 feet 6 inches beam, with a draft of 23 feet 8 inches. She has accommodations for 185 first-class, 60 second-class and 52 third-class passengers, with a crew of 119, and in addition has a cargo capacity of 2000 tons.

Driven by reduction geared turbines of 5800 horsepower, supplied with steam from five boilers, fired by fuel oil, the Munargo will maintain a speed of 15½ knots in service. The boilers are of the Scotch type, and she has Parsons turbines and De Laval gears.

The staterooms are replete with modern conveniences, including specially designed dressing tables, beds, electric fans, etc. The old type of berth has been largely superseded by specially designed enameled beds. The suite rooms on the promenade deck are finished in a light natural gray toned to match the hangings, while the trim is either mahogany or French walnut, according to the period of the furnishings. The suite rooms, as well as the special rooms on the bridge deck, have their own private bath rooms connecting. The public rooms are numerous, light, airy and exquisitely finished. They include a social hall, lounge and music room, smoking room, library and writing rooms, entrances and galleries. A sun and dancing deck for first-class passengers has been provided for on the boat deck over the smoking room. The dining saloon is located on the shelter deck, over the center of which is located a large dome and light well opening into the music room. Tables are arranged for small and large parties. Specially designed buffets, etc., blend harmoniously with the surroundings. An extensive refrigeration plant is installed with separate compartments for meat, fish, vegetables, butter and eggs, etc., and is of ample capacity for any emergency. Ventilation and heating throughout the ship has been cared for in a very complete manner, insuring comfort at all times, whether in the intense heat of the tropics or the extreme cold of the North Atlantic.

Separate complete hospitals are provided for passengers and crew, fitted with modern appliances.

Second and third class passengers are all taken care of aft. Accommodations surpass by far those furnished in older ships. Public rooms, including social hall, smoking and music rooms, are provided to insure comfort at all times. Separate hospitals for men and women are indeed the last word in regard to equipment.

A noteworthy point is the comfortable accommodations provided for the officers and crew, which are up to the most modern standards. Most of these are located on the boat deck with enclosed companion ways for access, so there is no need of coming in contact with the passengers.

The ship has been built on the transverse system of framing and to take the highest class in the American Bureau of Shipping and Lloyd's Register. She will start her career as an oil burner, but is so designed that conversion to coal will not be a difficult matter.

# EUROPEAN NOTES

## Impressions of a Californian Abroad

SINCE my last communication I have been scanning American papers and magazines, looking for some mention of an event which occurred here about January 1 and which is intimately linked up with the history of world trade and shipping for the last seventy years. I refer to the death of Sir Thomas Sunderland, on which to date I have been unable to find any American newspaper comment.

As the life of Sir Thomas is practically a history of modern British shipping, perhaps a short review of that life would be fitting for these notes and of interest to the readers of Pacific Marine Review.

### A Great British Operator

Thomas Sunderland was born at Aberdeen, Scotland, in August, 1834. His father having died while the boy was very young, he was raised under the care of his grandfather, Thomas Webster, who owned a small cooperage and fish curing business on the East Coast of Scotland. Sent to Aberdeen University when 14 years old to prepare for a life in the ministry, young Thomas after a year's study decided that commercial life was more desirable, and entered the office of an Aberdeen merchant, where he worked for two years, then went to London and secured a position as senior clerk with the Peninsular & Oriental Steam Navigation Company. Sixty-three years later, in 1914, he retired from the position of chairman and managing director of that company, which had, under his guidance, become probably the most powerful steamship operating organization engaged in international trade.

This remarkable achievement was due to the patient, careful, constructive work of a great mind backed by great physical energy. At the age of 20, three years after entering P. & O. employ, Sunderland had mastered the details of the London office work and was sent out to Bombay, where he soon took full charge. A few years later, about 1858, he was transferred to Hongkong and became chief representative of the P. & O. Company in the Far East with independent powers. This was long before Suez Canal days or any great telegraphic communication system, and it was often necessary that foreign representatives make momentous decisions with no opportunity for consulting the home office.

So Thomas Sunderland established coasting and feeder services, founded the Hongkong & Shanghai Banking Corporation, promoted the Hongkong & Whampoa Shipbuilding & Drydock Company as a little over time work in addition to his regular duties.

Each of these latter enterprises is very much alive today—in fact, they are about the strongest of their kind in Asia—while the feeder and coasting systems of the P. & O. Company remain practically the same as when first planned in 1859.

In 1867 he was recalled to London. In 1869 the Suez Canal opened and it became necessary for the company to thoroughly reorganize its routes and completely overhaul its fleet. Sir Thomas took charge of this work with characteristic energy, so that by 1875 the affairs of the company were in line with world progress. He was appointed managing director of P. & O. in 1873 and in 1881 chairman of the board. He carried on a long organized battle for British representation on Suez Canal management, from which he emerged triumphant in the agreement of London, November 13, 1883, through which ships of all nations received equal treatment and much more favorable conditions as to dues, and British shipowners gained representation on the canal board of directors. Naturally under the British system he was soon knighted and many honors were conferred upon him. He served in Parliament six years, and was on many committees, notably the load line commission of 1882. Last but not least, before retiring in 1914 he trained a most notable successor, the great Lord Inchcape.

Such a life (and Britain can claim many in the annals of her merchant marine) shows to the American engineering mind better perhaps than would be possible in any other way that foreign trading means going out to do on the sea lanes and at foreign terminals just what the great American railroad builders have done on the deserts and prairies of the American continent.

### Governmental Economy

I note that economy is the watchword at Washington, so here goes for an example of governmental economy on this side. Some time ago the shippers of New Zealand complained that ship owners were asking too high freight rates and the Imperial shipping committee was asked to investigate. They did so, and early in January brought out a report unanimously upholding as reasonable the rates now in force. The report deals exhaustively with the manner in which cargoes are gathered in New Zealand, the stevedoring methods, and other matters as affecting the time for round voyages, and the purchasing of British goods by New Zealanders as affecting outward bound cargoes. Many experts worked on the investigations and sufficient numbers of the report were printed to supply all shippers in the various New Zealand ports and all interested shipowners. The committee included representatives of the various British dominions and also five "persons experienced in shipping and commerce." The cost of preparation was at present exchange $69.10, and of printing and publishing about $76.30, or a total of $145.40.

### New Zealand Stevedores

While considering this shipping committee report, a letter reached me from New Zealand, written by an old California friend who is familiar in a practical way with the shipping game. In the following excerpt he comments on the New Zealand stevedore:

"Auckland is the largest city, most favorably situated in having a backdoor harbor giving access to the West Coast. Both it and Wellington have splendid harbors and wharves with the best facilities I have seen anywhere, but all these features do not mean efficiency, since there are just as many men employed as though the cargo had to be staged out. The waterside workers, as they have misnamed themselves, are a highly respectable body of men, calm and deliberate in their actions, unless it looks like rain, whereupon they immediately go into executive session to decide whether they will carry on or not. The bosses have got used to it—the public pays, and pays for it through a much lower standard of living (at greater cost) than in the United States. As stated, the 'wharfies' are very respectable. When a big 'home boat' is discharging cargo from half a dozen hatches, you can look alongside the shed and see from four to eight men sitting on trucks abreast of each hatch deliberating and canvassing the topics of the day. Usually they are neatly dressed (for there are no 'casharoos'), wearing vests, neck ties, belts, the whole covered with a serviceable apron. But curiously enough this 'chafing gear' is worn on the back, to protect the clothing while resting. The harbor board of Auckland was recently petitioned by these 'gents' to install bath rooms on the wharves. No reason was given. Now if it had been bedrooms or cushioned seats—"

### French Maritime Training

A great deal of complaint is coming from French shipowners recently at the freak legislation which is constantly up for consideration in the Chamber of Deputies. The Socialist bloc apparently have the upper hand, and they are constantly meddling with the affairs of the steamship companies. This is particularly true in the matter of training for officers, and an attempt is now being made to hand over this important work to national schools of navigation. Formerly deck officers were recruited from practical seamen with several years' experience, who were put through an intensive course of theoretical training in shore schools, there being sixteen of these schools situated in commercial and shipping ports. It is now proposed that all deck officers will be exclusively selected from the graduates of three national schools of navigation, no practical experience as seamen being required and the minimum age being set at 18 years. Some of this type of officer have already been tried out and present a rather sorry record, shipowners going as far as to hold these inexperienced youngsters responsible for much of the increase in marine casualty which has attended the operation of the French merchant marine in the last few months. So you see, the freak marine legislation is by no means confined to America.

# TWIN SCREW STEAMER GINYO MARU

THE new twin screw geared turbine steamer Ginyo Maru is one of the steamers to be engaged in the regular passenger and freight service between the Far East and the West Coast of South America, operated by the Toyo Kisen Kaisha.

Owing to the growing trade between the said parts of the old and new worlds, improvement of such an inefficient and heterogeneous fleet has been contemplated. Immediately after the armistice, steps were taken for reinforcing this fleet with new twin screw geared turbine intermediate passenger steamers and also with a number of modern economical freighters, allowing the withdrawal of the old oil tanker Kiyo Maru for the service for which she was primarily intended.

Among these new steamers the Rakuyo Maru and Ginyo Maru are the most noteworthy vessels. (A sister ship to the latter is still under construction.) The principal particulars of these steamers are as follows:

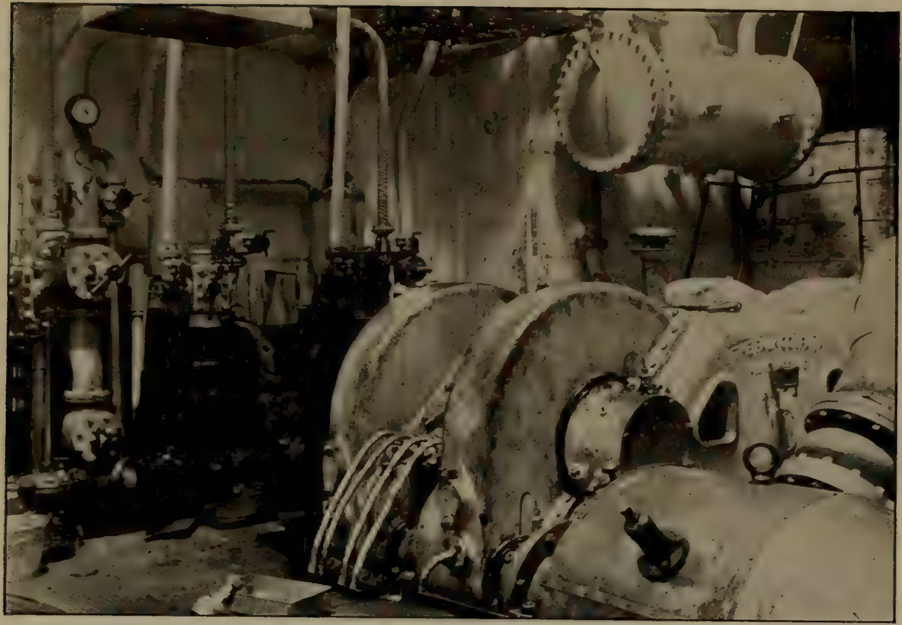
The new Japanese twin screw steamer Ginyo Maru on her trial trip

| Name of ships | Ginyo Maru | Rakuyo Maru |
|---|---|---|
| Date of completion | August, 1921 | May, 1921 |
| Class | Lloyd's 100-AI | Lloyd's 100-AI |
| Builders | Asano S. B. Company Tsurumi | Nagasaki Yard Mitsubishi S. B. Corp. |
| Length bet. perpendiculars | 445 feet | 460 feet |
| Breadth molded | 58 feet | 60 feet |
| Depth to shelter deck | 40 feet ½ inch | 40 feet 6 inches |
| Gross tonnage | 8600 tons | 9418 tons |
| Deadweight capacity | 11,200 tons | 12,600 tons |
| Number 1st class passengers | 40 | 46 |
| Number 2d class passengers | 38 | 51 |
| Number 3d class passengers | 416 | 612 |
| Maximum service speed fully loaded | 12 knots | 12 knots |
| Propelling machinery | Twin screw Parsons' reaction turbines with double reduction gearing | Twin screw Parsons' impulse and reaction turbines with single reduction gearing |
| Boilers, number and type | 4 single-ended Scotch | 5 single-ended Scotch |
| Superheaters, type | Foster's waste heat type | Esaky's smoke-tube type |

Although many modern improvements have been incorporated both in design and construction, the Rakuyo Maru is only a slight improvement on the Anyo Maru, which was built in 1913, and has exactly the same dimensions. Accordingly we shall give herein a full description of the Ginyo Maru only.

### General Arrangement

The Ginyo Maru is of the type generally called a shelter deck vessel. The ship has three continuous decks all fore and aft and complete double bottoms. Similar to several other vessels built by the Asano Yard, side stringers are omitted in principal cargo holds and the ship is built with frame spacing as wide as 36 inches and also very widely spaced hold pillars. This arrangement is considered as specially convenient in loading Chilean nitre for



View in the engine room of the Ginyo Maru showing high pressure turbine. Note the Falk reduction gears built in Milwaukee

her homeward voyage. Above the shelter deck there are a forecastle erection and two large steel deck houses, the top of the houses forming the midship and after boat decks, above which are the lower and navigating bridge decks.

### Passenger Accommodation

Ample spaces are given to the various classes of passengers. The first class quarters are situated in the midship deck house, and include spacious entrance halls, dining saloon and smoking room. The dining saloon is situated at the forward end of the house and has separate small tables to accommodate forty-one persons. Inside, the room is paneled with white oak, in very tasteful light color, and is finished to make a contrast to the furniture of dark colored sakura (Japanese flower cherry). The floor of the room is covered with cork tiles. The first class smoking room is fitted in the steel deckhouse at the after end of the midship boat deck. This room is finished in fumed oak. A well arranged fireplace, large square vertical sliding windows and luxuriously stuffed chairs and couches make it a very cosy apartment.

Second class passengers are accommodated in three, four and five berthed cabins, located alongside the machinery casing on upper deck, and for these also well arranged dining and smoking rooms have been provided.

Third class accommodations are divided into Japanese and Chinese quarters, each having a separate compartment for single lady passengers. Each quarter has metallic berths in two tiers, mess tables and seats, and also a pantry. Separate hospitals for male and female and a dispensary are fitted up in the after deck house.

Lighting and ventilation have been very carefully arranged in preparation for the tropical summer heat, which will be met almost in every voyage. The refrigerating equipment is of very complete character for the same reason, there being an insulated space of about 5000 cubic feet, divided into several compartments for stowing provisions. The refrigerating machine is of the J. & E. Halls standard $CO_2$ type and is fitted up in the recess over the engine room.

Culinary equipment includes three galleys, viz., European, Japanese and Chinese, each equipped with cooking ranges of large size and several other fittings especially adapted for the different modes of cooking.

### Cargo Handling Equipment

Very efficient cargo handling appliances have been supplied. Fourteen wooden booms are provided to load and discharge cargo through five large hatchways 20 feet wide, and of various lengths. These booms are served by fourteen 7-inch by 12-inch double geared horizontal steam winches. The two derrick booms on the after side of the fore-mast and two on the fore side of the main mast have a capacity to handle any weight up to 10 tons; all others will handle up to 3 tons.

### Windlass and Steering Gears

There is a powerful spur geared anchor windlass of the direct grip and quick warping type. The bower anchors are of Hall's latest improved stockless pattern, and are stowed in the hawse pipes as usual. The stream anchor is of the similar type and also is stowed in a hawse pipe passing through the counter of the ship, and is to be handled with a capstan windlass placed immediately abaft the after deck house.

Steam steering engine is of the Brown's steam tiller type, situated at the after end of the upper deck and is actuated from the bridge through telemotor gears.

### Electric and Wireless Installation

The ship is lighted throughout by electricity. Two sets of dynamos coupled to high speed reciprocating engines are placed in the recess over engine room for this purpose. A great number of fan motors are fitted in various parts of the ship for use in tropical climate. The electrical equipment also includes revolution and rudder head telltales fitted in the wheel house, and a wire-

One corner of the first-class dining saloon on the Ginyo Maru less installation of the Japanese government standard quenched spark type.

### Propelling Machinery

The propelling machinery of the Ginyo Maru consists of two sets of Parsons' geared steam turbines, each set comprising one high-pressure and one low-pressure turbine in series coupled to a set of double reduction gearing, and driving one outward-turning four-bladed screw propeller. Ahead turbines are to consist of reaction wheels only, while astern turbines are of a single impulse stage only, having three rows of bucket wheels, incorporated in the rear end of the high-pressure and low-pressure ahead turbine casings. All are to work with steam of initial pressure of 180 pounds and about 70 degrees superheat. The turbines were manufactured by the Midwest Engine Company, Indianapolis, Indiana, and the reduction gearing by the Falk Company, Milwaukee, Wisconsin. Condensers and all auxiliary machinery were manufactured by the Asano Yard or by various firms in the neighborhood of Yokohama.

The boiler installation consists of four single-ended boilers of usual marine return tube type, designed for a working pressure of 200 pounds per square inch. All boilers are provided with Howden's system of forced draught and are fitted with Foster's "waste heat" superheaters. The furnace fronts are constructed to burn either oil or coal only, or coal in conjunction with oil. The oil fuel installation is fitted complete in the machinery space, including pumps, heaters, filters and burners, specially designed and arranged by the owners and based upon their extensive experience since 1908.

# Reconditioning of Atenas

THE passengers on the United Fruit Company's steamship Atenas, when it sailed Christmas Eve, had a Christmas present in the form of a completely reconditioned vessel. From stem to stern she had been completely overhauled, and cabins, saloons, etc., repainted and redecorated. This work was rushed to completion in three weeks' time by the Johnson Iron Works, Drydock & Shipbuilding Company, Inc. This is said to be the largest reconditioning job ever awarded a New Orleans firm by competitive bids.' Heretofore this work has been done in New York, the Heredia and the Tanamo being reconditioned there a short time ago, but the Johnson Iron Works convinced the United Fruit Company that the work could be more economically done in New Orleans, with the result that bids were requested. The job amounted to about $85,000.

### Saw Service in War

This was the first time she was extensively overhauled since she was in war service, and over a year since she was in drydock. During the war she was invaluable on account of her insulated holds, as there are few American ships of this character. Her cargo consisted mostly of frozen meats, and her cabins were occupied by officers and nurses. A large percentage of the insulated American ships belong to the United Fruit Company.

The work was handicapped somewhat by inclement weather in the first part of the month, and painting on the inside of the hull was delayed for several days on account of the hull sweating. As the Atenas is too large to be docked in the Johnson Drydocks, she was taken to Jahncke's Drydocks, where the outside of the hull was scraped and painted.

### Cabins Redecorated

The cabins were thoroughly cleaned and redecorated. The passage ways, halls, stairways and dining saloon were retiled with fiber tiles of various colors worked into patterns. The galley was retiled with clay tiles where necessary. The provision boxes on the main deck were completely rebuilt. The old insulation was replaced by washed cow hair, and the old doors replaced by patent doors. The brine coils were cleaned, and defective ones renewed.

The cylinders of the main engine were reground, and new piston rings were made. The auxiliary machinery, such as pumps, refrigerating machines, cargo winches, steering gear, etc., were put in first-class condition, and the tail shaft was drawn. Several tank top plates were renewed, a 50-ton hydraulic jack holding the boilers while they were being replaced.

The well plating was sheathed with pine. This was done to assist in insulating the holds, and it was necessary to remove the insulation under the deck, in fastening the decking. This was also replaced by cow hair.

Practically all of the boat deck was relaid. This necessitated the removal of life boats, davits, tanks, boxes, etc., and deck fittings in general. Wherever the planking was found to be defective, it was renewed. New canvas was laid over the planks.

F. H. Behrens, New York representative of Pacific Marine Review

PACIFIC MARINE REVIEW is now represented in New York and on the Atlantic seaboard by Mr. F. H. Behrens, with headquarters at 30 Church street, New York City.

Mr. Behrens has had ten years' experience in trade journalism. From October, 1911, to April, 1920, he served in various capacities in the business and editorial departments of the Electric Railway Journal of the McGraw-Hill Company.

In April, 1920, Mr. Behrens joined the staff of Simmons-Boardman Publishing Company as an advertising solicitor, devoting the major portion of his time to that work on the Railway Electrical Engineer. For two months prior to the 1921 exhibition of the Marine Equipment Association (now the American Marine Association), Mr. Behrens devoted his entire time to the promotion of that exhibition. He thus came into intimate and friendly contact in a business way with a large number of marine equipment manufacturers in New York, and, through serving on the enrollment committee, met many of the exhibitors from outside territory.

Mr. Behrens brings to the New York office of Pacific Marine Review a wealth of experience, a genial personality, and a determination to go the limit in service for our Atlantic Coast friends. We bespeak for him the kindly co-operation of the marine fraternity at his home port.

# THE BLOW-OFF COCK

## HEROICS, SPREES, AND "ORACLES"

By SEA FLAME

THE editor of the Seamen's Journal again attacks the Shipowners' Association and Sea Flame in a late issue of that publication. He also gives his attention to the editor of Pacific Marine Review. With the usual disregard for facts, it is intimated that the sole desire of the shipowner is to enslave and brutalize the seaman. The old stuff about universal freedom and involuntary servitude is reiterated. Sob-sister stuff about how a poor seaman, except by the master's permission, was not allowed to visit his mother's sick bed or attend her funeral, is also played up. Sea Flame would like to ask why such foolishness, when it is well known that mothers do not get sick and die when the steamer is at foreign ports; that is, not at those ports. Unrestricted shore liberty, with money to spend in foreign ports, disrupts and lessens all discipline, besides being an evil to the seaman himself.

The editor of Seamen's Journal also intimates that the Chief was living up to his true reputation when he sailed with a crew of inexperienced and incompetent seamen, who got drunk and diseased. He admits that the Chief might be able to cite rare cases where the union men had got drunk, but in all such cases the offenders had been expelled from the union. Rats! The Chief can give the names of three steamers sailing from San Francisco of which he was chief in the years 1915, 1916 and 1917. All these had union crews and every one was inconvenienced and delayed during the voyages by reason of drunkenness and absence of the crew, and in no instance was anything done about it. One trip was made in another steamer during the war to a Pacific Island port. A number of the good union crew got loaded and failed to show up at sailing time, and all honor to the master, he left them behind. About ten days later they showed up on board at another port, wiser and more sober.

The Chief also knows personally of another steamer that lost twelve hours' time at the canal owing to a drunken crew, all of whom were union men. The Chief is also proud to say that he was American enough to take out a steamer when the maritime strike was called, and while there was some drunkenness there was much less than in many other instances. One thing, the American consuls at foreign ports do not now appear to be so amenable to the dictates of the lobbying union leaders, and give the vessel owner some rights.

While the Chief has always maintained that Andrew Furuseth is sincere in his teachings, it is also believed Mr. Furuseth is too ideal. He should take a trip with the modern union seaman and then perhaps his opinion would undergo a change. When Andrew was before the mast there was some sort of discipline observed. However, he has created a Frankenstein which has gotten out of his control, and it will take hard times and more men than jobs to get things back to normal again.

Further, Sea Flame asserts what is known as a matter of fact, that during the world war the United States Shipping Board at tremendous expense fitted out ships and stations for the proper training of young American boys in the work of seamanship in all its branches. Did the Maritime Union leaders take kindly to this? They did not. They would not allow these young men to ship as seafarers unless they joined the particular union under whose "jurisdiction" they were to work. Was this American? Did this not show that the union was run solely and only for the benefit and emolument of its exploiters, who drew large salaries from the union funds, and when they now see that these same funds are decreasing are putting up a howl?

The Seamen's Journal's editorial winds up its diatribe against the shipowners with the customary accusation of the desire on their part for "profits, profits and more profits." A glance at the balance sheets of most ship operators' books will show "Irish dividends." If the seamen's unions are so sure they can operate vessels and make lots of money, why don't they petition the government for a vessel with which to try the experiment? Let them take the operators' place for once and see where they get off.

While Sea Flame has no objection to a union when run in a way to benefit all, he is opposed to a system that permits a few loud-mouthed agitators to live in luxury at the expense of their deluded fellow-men and the disruption of business generally. He would like to see a comparison of the salaries now drawn down by the officials of the unions with what these same men received when they were workers. It would be interesting, perhaps, not only to the business men, but to the poor dupes that pay the bills and receive as a reward the title "Fair Man."

### Working the "Oracle"

An incident of the evils of the La Follette Act was recently noted in this port. The steamship Nyanza arrived here from New York. Her firemen, of whom there were nine, were signed on the articles at $35 per month for the round trip. On the run from New York to this port the chief engineer reported that the men were willing and hard workers, having no complaints to make as regards food or treatment. However, on reaching this coast, the crew were approached by delegates of the seamen's unions, and immediately dissatisfaction commenced. The men went ashore as they pleased, but only staying long enough to escape charges of desertion. Demands for more wages were made and the master and agents met the men, and wages were raised to $45 per month. The Nyanza left the Puget Sound ports, where a part cargo was loaded, and then she returned to San Francisco to complete loading for East Coast ports. The seamen's unions presumably meantime taught the men how to "Work the Oracle," for all had drawn their wages in accordance with the wise(?) provisions of the La Follette Act, so that only about twelve or fifteen dollars was due each man.

On Sunday morning, February 19, the steamer being ready to sail, a demand was made for an increase of wages to $55 per month for the firemen. The agents and master held a conference, and it was agreed to grant this, and then a further demand for an extra man to keep the forecastle clean was made. Also that the raise in wages be certified to by a United States shipping commissioner in spite of the fact that it was Sunday and the custom house closed. At this the captain and chief got peeved, and determined to can the whole bunch. The men, however, refused to be discharged, and also refused to work unless the raise in pay was certified to. The chief engineer was appealed to, and the Nyanza being a coal burner with steam up, it was determined to make a start to get out of the three-mile limit, and then, if the men refused to work, a charge of mutiny could be laid. Preparations were made to get away from the wharf, but at the last moment the firemen threw their effects on the dock and walked ashore. Considerable delay was experienced, but ultimately a scratch crew was picked up, and the voyage begun after a day's loss of time to the vessel.

The men lost the few dollars due them, but as they were all good union men, it is presumed that these amounts were made up and they were looked upon as heroes by the bunch who pass in the limelight as true friends of "organized labor." The above incident is true, and being recent can be easily verified. What answer has the union?

Is it not time that some action toward the repeal of this pernicious La Follette foreign seamen's act was made?

# MORE "MARU"

Inspired by an article that appeared in the September number of Japan, the magazine published in San Francisco by the Toyo Kisen Kaisha, on the meaning of "Maru", Kiyoshi Kawaii of Yokohama has written an interesting little essay on the word. Although it adds little to the explanations published in Pacific Marine Review for January, it sums them up so excellently that it is well worth publishing. Mr. Kawaii's article as it appeared in Japan follows:

I have read with much interest an article by Mr. John Sharrock under the title of "What is the meaning of the word 'Maru'?" which appeared in the September issue of Japan.

Regarding the derivation of this word, I hope you will pardon me for adding my mite to the explanation already given.

The word "Maru", represented by the ideograph above, has two different meanings.

1. (a) "Circle" or "Ring" — when used as a noun.
   (b) "Round," "Complete"—when used as an adjective.
2. The suffix for the name of a person or thing.

The word "Maru", which is now commonly used with the name of a ship, comes from the latter sense, and it is a colloquial pronunciation of the word "Maro", which originally meant "Self". The word "Maro" was used in olden times by nobility as a pronoun when one referred to one's self in addressing another, just as the word "I" is used in English; as, "Maro mo uta yoman" (I, too, will compose a poem), as we often see in old books. In this way, both words, "Maro" and "Maru", came to be used as a suffix for the name of a male person, as in "Kakinomotono Hito Maru", an eminent poet of the seventh century, and "Sakanoueno Tomura Maro", a famous general who lived in the ninth century. In ancient times such a way of naming a male was practiced mainly by the families of the courtiers and direct retainers of the Emperor, but after the middle ages it became a fashion among the military caste to put "Maru" as a suffix to the name of a juvenile, such as "Ushiwaka Maru", "Ran Maru", and so forth. It is to be noted that the "Maru" was applied also to the names of certain domestic animals or tools possessed or fondled by high-class people, as in "Hiza Maru", a sword well known in Japanese history; "Kogarasu Maru", a celebrated sword hereditarily owned by the Heike family; "Shishi Maru", a famous musical instrument; "Okina Maru", a noted dog, and so on. Such a way of naming an animal or thing seems to be due to the fact that the owner had so strong an affection for it that he gave it a name similar to a man's in personification. As stated in Mr. Sharrock's article, the word "Maru" is applied also to a castle, but in this case it has rather a different meaning. The old castles had each a proper name of its own, as the castle in Tokyo or Yedo was called "Yedo-jo", the one in Nagoya "Nagoya-jo", etc. These castles consisted of the main buildings for the ruling Shogun or Daimyo, surrounded by two, three or sometimes more outer walls and moats for defense, and the central or main circle or enclosure was called "Hon Maru", or the Main Circle; the second outer one, "Nino Maru", or the Second Circle, and the third outer one "Sanno Maru", or the Third Circle. Thus we see that the word "Maru" used for a part in a castle comes from the meaning of a circle, quite apart from the case as applied to a ship, etc.

Regarding the first application of the word "Maru" to the name of a vessel, the Japan Social Encyclopedia (Nihon Shakaiji) tells us as follows:

"In 19th year of Tensho (1591 A. D.) when Toyotomi Hideyoshi attempted to subjugate Korea, he ordered the feudal lords throughout the country to build large vessels and contribute the same to his government for army transportation. The Lords who were allowed a hereditary pension of over one hundred thousand koku had to build two large vessels, and Lords who were under the direct control of Hideyoshi had to build three large-type vessels and five mid-type vessels. It was also ordered that these newly built vessels, when completed, were to be brought to certain ports of the provinces of Settsu, Harima and Izumi. On this occasion Hideyoshi himself also built one large vessel to which he gave the name of 'Nippon Maru'—this is the origin of the word 'Maru' as applied to the name of ship."

While the encyclopedia above mentioned does not give the name of the reference book from which the information was taken, I presume it was abstracted from Dr. Kurokawa's booklet called "Kogei Shiryo" (A History of Industrial Arts), and the statement practically coincides with what I learned from a historian, so it may well be taken as authentic.

It will be interesting to note that in Japan it is a custom to apply the word "Maro" or "Maru" to the name of a male only and not a female, and we naturally come to the conclusion that in our country we treat a ship as of the masculine gender, contrary to the usage in other countries.

# TEN YEARS OF WORKMEN'S COMPENSATION IN CALIFORNIA

By WILL J. FRENCH
Chairman California Industrial Accident Commission

A GLANCE backward over the first decade of workmen's compensation in California is worth while, because of the widespread interest in the law and its close connection with the two groups of employers and employes. The social purpose of relieving the distress that follows industrial injuries brings all citizens within the compensation orbit. The principle of adding the human cost to the other costs of industry is sound, because it is the cost deserving first consideration and its belated addition showed the United States as the last of the nations of the world to overthrow the old system of employers' liability. It is comforting to realize that more progress has been made in this land during the last ten years than anywhere else on the globe.

Californians will remember the strong opposition to the introduction of the compensation system. The men and women of labor advocated the better way. They were supported by citizens who recognized the injustice of permitting an injured man to shift for himself after he gave limb or blood to help industry proceed. And when he made the supreme sacrifice there was a call that his widow and children should not be forsaken and left destitute, and this call has been answered in part and should be answered in full.

The compensation system is now recognized as superior to employers' liability, and those men at the head of industrial enterprises who resisted compensation because they did not believe they should have to pay for accidents they were not responsible for, speedily saw the strength of the argument that the human toll was a legitimate cost and should be charged to the finished product by means of insurance. Students of compensation will remember the opposition of the San Francisco Chronicle and the Los Angeles Times. Both of these papers were converted and have admitted their former position was unsound. On May 19, 1920, the San Francisco Chronicle editorially said under the heading "The State Compensation Act": "We long since discovered that we were wrong. The compensation act is a good law admirably administered." On January 2, 1918, the Los Angeles Times stated in an editorial: "The Industrial Accident Commission has been welcomed alike by the employer and the employe and will probably become a fixture in the government of California. The commission has succeeded in giving the public something definite and desirable in return for the money expended." These expressions are typical of the changed view of many newspapers and individuals in California.

For the years 1912 to 1920, inclusive, there were reported 5358 California industrial deaths (including 30 women), 13,374 permanent injuries and 687,081 temporary injuries, giving a total of 705,813. The commission can accurately estimate that there were approximately 1,000,000 industrial injuries in this state during the last ten years. Life pensions were awarded 104 permanently disabled men.

No data is available for the year 1912 in considering compensation payments to injured men and women. From 1913 to 1920, inclusive, the sum of $26,971,863 was paid in compensation, $8,916,901 for medical, surgical and hospital treatment, a total of $35,888,764.

The magnitude of the work done in the compensation department is shown by the records of 11,145 cases decided where controversies existed. It was necessary to hold 13,619 hearings to decide these cases. In addition, the commission has passed upon 5105 supplementary proceedings and also 2125 settlement agreements. Many thousands of incipient controversies were adjudicated by the San Francisco and Los Angeles offices. Compensation was paid without contest in the great majority of injuries, because the law specifies the amounts due.

Certificates of consent to self-insure have been issued to 242 employers since January 1, 1918. Security to the amount of $4,407,000 has been deposited with the state treasurer by these employers, whose total average number of employes was approximately 212,303.

The State Compensation Insurance Fund opened its doors on January 1, 1914. During 1914 the premiums written by the State Fund were $547,161.24, and each succeeding year has shown a steady increase. In 1920 the total was $4,417,761.32. The total volume of compensation business transacted by about thirty carriers in California during 1920 was $12,944,506.67, and the State Fund did 34.13 per cent of this business. On June 30, 1921, the State Fund's assets were $5,651,924.05 and the net surplus was $1,729,797.97 after paying dividends to policyholders to the amount of $2,892,827.58. It is this custom of returning excess premiums to employers that makes the State Fund popular with those who have to purchase compensation coverage.

The 1913 California legislature appropriated $100,000 for the use of the State Compensation Insurance Fund, in order to provide a working capital. Not one cent of this $100,000 was called upon. The 1921 California legislature unanimously passed a bill providing for the return of the $100,000 to the state treasury. The bill was approved by Governor Stephens and the money is now in the state's strong box.

The safety department is of prime importance. The records show that twenty sets of safety orders have been issued for the larger industries of California. Industrial operations have been revolutionized by the general acceptance of the safety principle. The co-operation of employers and employes is fine. More than 14,000 plants have been inspected, employing approximately 800,000 employes. In addition, within the last few years 7945 boilers, 2038 air tanks and 13,116 elevators have received visits from the commission's engineers, and the electrical inspections number 1373.

The record shows a decrease of 31.21 per cent in the death rate per 100,000 of population in California from 1914 to 1920, and this encouraging showing should be an incentive to further conserve human life, the true wealth of a state or nation. To this end it behooves each employed man and woman to use safeguards and protective devices, to practice safety, to discourage carelessness and to avoid flirting with the undertaker.

The Industrial Accident Commission has an altogether too limited force of safety engineers. The work sorely needed to be done can only be skimmed. Additional funds should be provided for safety purposes. The ensuing benefit would be a fewer number of industrial deaths and injuries, in which benefit the employes would be the principal gainers.—California Safety News.

# FULL SPEED AHEAD

EDITED BY ANDREW FARRELL

## Building and Repairing

**Full Speed Ahead: Building and Repairing, 173; Deep-sea Shipping, 184; Marine Insurance, 192; Rates and Freights, 196; About People, 200.**

### Inter-Island Bids

The Sun Shipbuilding Company, Chester, Pennsylvania, was low bidder on a vessel for the Inter-Island Steam Navigation Company of Honolulu when tenders were opened on February 13. The Sun bid was $1,027,000 and the time 285 days. The Newport News Shipbuilding & Drydock Company was tied with Sun as to time and was second in amount with $1,100,000. The lowest Pacific bid was that of the Los Angeles Shipbuilding & Drydock Company, two tenders being submitted, one of $1,135,000 if the engines were constructed by the Hooven, Owens' Rentschler Company and one of $1,150,000 if the Los Angeles company built the engines.

A meeting of the board of directors of the Inter-Island will be held in Honolulu February 27. Authorization of work is expected. James A. Kennedy, president of the company, will sail for San Francisco March 1 to confer with Pillsbury & Curtis, Inter-Island representatives, regarding the bids.

It is regarded as probable that the contract will go to an Atlantic yard. Although the Inter-Island was disposed to favor a Pacific yard, because of easier supervision, quicker delivery after completion, and for other reasons, Pacific bids generally are too high to warrant belief that a contract will be placed in the West. On the other hand, until various tenders have been analyzed, especially as regards engine plans, the successful bidder will not be known. As was stated last month, the Inter-Island placed upon bidders the burden of designing a satisfactory engine to drive the vessel at a sea speed of 17 knots.

The complete list of bids follows:

| Shipbuilders | Days | Price |
|---|---|---|
| Merchants S. B. Corp. | 364 | $1,151,489 |
| Newport News S. B. & D. D. Co. | 285 | 1,100,000 |
| Sun S. B. Co. | 285 | 1,027,000 |
| N. Y. S. B. Corp. | 425 | 1,273,500 |
| Wm. Cramp & Sons Ship & Engine Bldg. Co. | 365 | 1,340,000 |
| Federal S. B. Co. | 300 | 1,128,370 |
| Todd Drydock & Construction Corp. | 245 | 1,350,000 |
| Bath Iron Wks., Ltd. | 456 | 1,360,000 |
| Bethlehem S. B. Corp., Ltd., Sparrows Pt. or Harlan Plants | 305 | 1,115,000 |
| Los Angeles S. B. & D. D. Co. | 300 | 1,150,000 |
| Union Const. Co. | 300 | 1,468,300 |
| Bethlehem S. B. Corp., Ltd., San Francisco | 305 | 1,199,350 |
| Moore S. B. Co.—No bid submitted | | |
| Staten Is. S. B. Co. | 365 | 1,275,000 |

1. If main engines be manufactured by Hooven, Owens, Rentschler Co., price to be $1,135,000.
2. If engines be constructed by the L. A. S. B. Co., price to be $1,150,000.

Note.—The tender of the Cramp company was not received until the 14th, probably owing to delay in arrival of mails.

### Federal Gets Contract

The Federal Shipbuilding Company of Kearny, New Jersey, announces that it has received a contract from undisclosed interests for the construction of a 10,025 deadweight ton flush-deck steel freighter. She will be 425 feet long between perpendiculars, 56 feet broad, of a draft of 27 feet on her deadweight of 10,025 tons; and will be driven by a Parsons turbine developing 3100 shaft horsepower, steam to be supplied by three Scotch boilers 15 feet 3 inches in diameter and 11 feet 3¾ inches long. Her loaded speed will be 11½ knots. The keel-laying is scheduled for March 1, launching for August 1 and delivery for September 1.

Although only one contract for a sea-going vessel was placed in the United States in 1921, said President Stevenson Taylor of the American Bureau of Shipping at the annual meeting January 31, prospects for 1922 are much brighter. Already "there are substantial inquiries for at least a dozen seagoing craft, most of them passenger vessels, as there is a decided shortage of that type of craft in the United States." The year 1921, said Commander Taylor, established a low-water mark in American shipbuilding.

Photo copyright New York Shipbuilding Corporation

The 535 Peninsula State, built by the New York Shipbuilding Corporation for the Shipping Board, on her trial trip February 2. She is the last of sixteen combination vessels built by New York Ship, nine being 535's and seven 522's. The order was the greatest ever placed for passenger vessels with a single shipyard. On her trial the Peninsula State made a speed of 18.8 knots, more than a knot faster than her designed speed.

Cox & Stevens, the well-known firm of naval architects and marines engineers, bear similar testimony. They say that they find business conditions improving and that they look forward to an active year. Not only is the amount of general consulting work increasing, but they have recently placed a number of orders for commercial vessels from their designs, and have on their boards several new projects that probably will mature in the near future.

### Contracts Awarded

The Atlantic Coast Shipbuilders' Association reports that Pusey & Jones, whose yard at Wilmington has been closed since work for the government was completed, have received a contract from the Seaboard-Bay Line Company for two large combination vessels, 330 feet long by 58 broad; that the Merchants & Miners' Line is making inquiries for two or more passenger vessels; and that bids will be received for the construction of six motorships for the Tri-National Steamship Company. The association believes that the year will witness a marked demand for passenger tonnage.

### New York Ferries

Specifications for three new electric-drive ferryboats to be constructed by New York City for use between Manhattan and Staten Island have been completed and will be submitted to the Board of Estimate for approval, and bids probably will be opened the latter part of March. Grover A. Whalen, commissioner of plant and structures, described the new machinery as follows: "In order to secure greater economy in operation than is possible with reciprocating engines, it has been decided to install a steam turbine-driven generator supplying high tension alternating current to a motor at each end of the boat, the latter being direct connected to the propeller shaft. It will thus be feasible to run the two propellers at different speeds, which, it is expected, will result in increased propulsive efficiency as compared with the present method of attaching both propellers to one through shaft and revolving them at the same speed."

The freighter to be built by the Port Arthur Shipbuilding Company, Port Arthur, Ontario, for the Mathews Steamship Company will be a single-deck vessel, designed to carry cargo in bulk; 530 feet long between perpendiculars; having a loaded speed of 12 knots; a deadweight of 10,000 tons, equivalent to 400,000 bushels of grain; equipped with three-cylinder triple-expansion engines, 25½ by 41 by 67 inches, 42-inch stroke, developing indicated horsepower of 2100; having three Scotch boilers, each 13 feet 6 inches in diameter. The keel has not yet been laid.

Yachting on San Francisco Bay has been given considerable impetus and quite a bit of new work has been pledged the Madden yard, Sausalito, by the decision of yachtsmen to specialize on an S-type craft, designed by John G. Alden. As many as eight vessels may be built at a cost of about $1800 each.

## Diesel Plan Off

The following announcement has been made by the Shipping Board:

"Jacob S. Coxey, Sr., has made the proposal to the Shipping Board that he will take over 112 steel vessels constructed by the Submarine Boat Corporation and convert them to Diesel propulsion, at the expense of the government, at an estimated cost of $60 a deadweight ton, if he is permitted to purchase them at $70 a deadweight ton, or a net price of $10 after conversion, is given twenty years in which to pay this, the board to bear the cost of conversion, the conversion to be done under the direction of a naval architect, Theodore D. Wells, of New York, who is associated with Coxey in his enterprise.

"The proposal purchaser knows that the board has no authority at present to commit itself in the way he proposes. His plan presupposes the enactment of legislation by Congress making available the money necessary for the conversion. It is deemed unlikely that Congress would be disposed to do this. What Mr. Coxey asks is that the board give him an option on the boats under the arrangement he desires and he seems to think he can go before Congress then and obtain the requisite legislation.

"Such a course is too vague and the possibility of its being brought to the fruition Mr. Coxey anticipates too questionable to justify the board in giving him any such option as he suggests. The board is perfectly willing, and in fact anxious, to dispose of any or all of its vessels as promptly as possible, but it has no authority to tie up under indefinite option the boats specified by Mr. Coxey."

## Miscellaneous Work

The Pacific Diesel Engine Company, Oakland, has received a contract to install two 525-brake horsepower Werkspoor Diesel engines in the automobile ferry Golden Gate, under construction at the James Robertson Shipyards, Alameda, California. The engines will be installed in the center of the ferry-boat and will be direct connected with two 360-kilowatt generators. There will be installed also two motors of 750 horsepower each, one for a propeller at each end. The bid was $80,000.

* * *

The Wilmington plant of the American Car & Foundry Company announced February 4 that it had received a contract for the construction of two marine grain elevator hulls and that a contract for a ferry-boat was expected.

* * *

The fish-carrier Three Sisters, which was formerly operated by a 110-horsepower distillate engine, has had its engine removed and a 100-horsepower Enterprise Diesel engine installed at the yard of William Cryer, Oakland.

* * *

Contracts for ten 150-horsepower Diesel engines to drive the electric generators for the Livingston design of the New York State Canal Packets, have been awarded to McIntosh & Seymour by the Canal and River Transportation Company, New York. Contracts for hulls, electrical equipment and auxiliary equipment have not been awarded.

* * *

The Cowles Shipyard Company of Buffalo, New York, has been awarded a contract for the installation of the engines and boilers and equipment in a new steel tug for the Barge Canal. The job is to be completed March 15 and it is estimated that it will cost $25,000.

* * *

The McNab Company has been awarded a contract by the Navy Department to supply one set Kitchen reversing rudders with the necessary operating gear for a 35-foot captains' launch, having 100 to 150 horsepower and a speed of 17 knots.

* * *

Plans will be prepared immediately for the electrification of all dredges of the port of Portland, said James H. Polhemus, chief engineer.

* * *

## A Year's Building

The shipyards of the world during 1921 launched over a million and a half gross tons less of vessels than in 1920, says a statement just issued by Lloyd's Register of Shipping.

In the United States alone, it is pointed out, the decrease was 1,470,000 tons. British yards also showed a decline from the 1920 figure, but this drop of over half a million tons was largely offset by a gain for other countries of 467,000 tons.

The comparison between the launchings for the two years is shown by the following table, prepared by Lloyd's Register, giving the gross tons:

| | 1921 | 1920 |
|---|---|---|
| United States | 1,006,413 | 2,476,253 |
| United Kingdom | 1,538,052 | 2,055,624 |
| Other Countries | 1,797,214 | 1,329,789 |
| World | 4,341,679 | 5,861,666 |

While the 1920 total of launchings by American shipyards was greater than for that of either the British yards or those of other countries, it is stated, the lead of 420,000 tons over Great Britain for 1920 was transformed to a British lead of 531,000 tons last year, while the gap of 1,146,000 tons, representing the American lead over other countries in 1920 was converted into a lead of 790,000 tons for those nations last year.

### German Yards

For the first time since the war, Lloyd's Register gives figures of production by German shipyards, and these explain why the aggregate for other countries than the United States and the United Kingdom increased in comparison with 1920, while the American and British totals declined.

Launchings by the German shipyards during 1921 are given as 509,064 gross tons, or 42,000 tons more than the gain for all other countries than America and Britain, so that the minor nations, excluding Germany, showed an actual loss on the year's output.

The most significant feature of the German returns, however, is that they show that the shipyards of Germany have now more than regained their pre-war production. Launchings for that country during 1913 aggregated 465,000 gross tons, and as that was the record year for launchings of merchant ships in Germany, last year's total sets a new figure.

### Gain Over 1913

While the production during 1921 for the world was 2,803,000 gross tons less than in the record year of 1919, it was more than a million tons in excess of the 1913 world total. The output for the pre-war year and for the record year of production are shown in the following table:

| | 1919 | 1913 |
|---|---|---|
| United States | 4,075,385 | 276,000 |
| United Kingdom | 1,620,442 | 1,932,000 |
| Other countries | 1,448,722 | 1,124,000 |
| World | 7,144,549 | 3,332,000 |

It will be noted that while British shipyards last year launched less in actual tonnage and in the proportion of the world's total than before the war, the other countries showed gains in both respects. While the United Kingdom built considerably more than a half of the world total in 1913, the 1921 output was only slightly more than a third of the aggregate. The following shows the proportion of the annual world output by the different shipbuilding nations before and since the war (by percentages):

| | 1913 | 1919 | 1920 | 1921 |
|---|---|---|---|---|
| United States | 8.3 | 57.1 | 42.2 | 23.2 |
| United Kingdom | 58.0 | 22.6 | 35.1 | 35.4 |
| Other countries | 33.7 | 20.3 | 22.7 | 41.4 |

Within the past year, it is shown, the American percentage of the world's total was cut almost in half, Britain's percentage gained slightly and that of the other countries almost doubled.

Lloyd's Register supervised the construction of more than 60 per cent of the steel steamers and motor vessels of 1000 tons gross and over launched throughout the world during 1921. Of the total of 4,102,000 gross tons of such vessels, Lloyd's was in supervision of 2,538,680 tons, of which 1,260,999 tons were launched in Great Britain.

### Special Classes of Ships

In some respects the launchings for 1921 show gains over those for the previous year. Tanker construction, for instance, increased almost 65 per cent over the 1920 figure. Two-thirds of this class of building was done in the United States, but gains were made by Great Britain and the other countries, as the following figures, giving the launchings in gross tons of vessels of 1000 tons and over for the two years, show:

| | 1921 | 1920 |
|---|---|---|
| United States | 690,308 | 567,000 |
| United Kingdom | 250,868 | 65,400 |
| Other countries | 109,180 | 8,000 |
| World | 1,050,356 | 640,400 |

Increases are also shown in the number of large vessels being constructed. In comparison with 32 ships of 10,000 gross tonnage and over reported launched in 1920, there were 47 last year.

Motorship construction continues to gain. Vessels to be fitted with internal combustion engines, which were launched last year, total 306,642 gross tons, as against 189,977 tons in 1920. A decline is indicated, however, in the construction of ships fitted with turbines, the aggregate of this class of ships for 1921 being 1,195,000 tons, compared with 1,825,000 tons the previous year.

About 40 per cent of the total construction in British shipyards last year was for foreign account, 591,870 gross tons being launched for buyers abroad.

Following Great Britain and the United States in the amount of tonnage launched last year comes Germany, Holland, Japan, France, Italy, and the British Dominions are next, in the order named. Japan and the British Dominions show declines from the 1920 total, but gains were made by the others. The production of these countries, for the two years, was as follows, Lloyd's Register states:

| | 1921 | 1920 |
|---|---|---|
| Holland | 232,402 | 183,149 |
| Japan | 227,425 | 456,642 |
| France | 210,663 | 93,449 |
| Italy | 164,748 | 133,190 |
| British Dominions | 129,675 | 203,644 |

The total of shipbuilding orders in hand at the beginning of this year, throughout the world, according to the returns of Lloyd's Register, represented 4,457,000 gross tons. As a great part of this has already been launched, however, and little in the way of new work is being placed, the 1922 total of launchings will probably be well below the 1921 figure of 4,341,000 tons.

## The Isherwood System

Although the year 1921 has been very barren of orders for new ships, it is interesting to note that the Isherwood system has secured its share of the few new contracts that have been made, and so maintained the progress it has consistently made since it was introduced in 1907.

The following table, which records the number of Isherwood ships contracted for year by year is very interesting, in that it shows the general ups and downs of shipbuilding from a world aspect over quite a number of years:

| Year | No. of ships built, under construction and on order | D. W. carrying capacity Tons |
|---|---|---|
| Sept., 1907, to Dec., 1908 | 6 | 31,608 |
| 1909 | 36 | 212,992 |
| 1910 | 76 | 484,752 |
| 1911 | 140 | 958,795 |
| 1912 | 240 | 1,777,348 |
| 1913 | 270 | 1,993,034 |
| 1914 | 311 | 2,351,322 |
| 1915 | 468 | 3,548,221 |
| 1916 | 620 | 4,666,000 |
| 1917 | 800 | 6,332,150 |
| 1918 | 1050 | 8,707,700 |
| 1919 | 1260 | 10,594,700 |
| 1920 | 1395 | 11,962,400 |
| 1921 | 1418 | 12,032,400 |

It is only fair to say that included

in the above figures are a few of the vessels the construction of which has been cancelled or the work suspended, but no definite statement in regard to the number or deadweight tonnage can be made at the present time.

One of the most interesting ships among this year's contracts is a vessel ordered from the New York Shipbuilding Company by the Japanese fleet. The vessel is over 500 feet in length, and she is to be propelled by twin screws with steam turbine electric drive.

During the course of the year a number of oil tank steamers of over 18,000 and 20,000 tons deadweight have been launched. These vessels are the largest oil tankers which have yet been built, and are of dimensions unheard of for this class of vessel before the advent of the Isherwood system made such ships possible.

While the bulk of the vessels constructed on the Isherwood system during the past year or two have been oil tankers, thus following the demand which has prevailed, the system is nevertheless eminently suitable and advantageous for all other types of craft, as is shown by the following analysis of the table of ships referred to above:

General cargo vessels, colliers, ore steamers, passenger vessels and Great Lakes freighters: 635 aggregating 5,731,070 tons deadweight carrying capacity.

Oil tank steamers: 657 aggregating 6,240,080 tons deadweight carcying capacity.

Barges, dredgers and trawlers: 126 aggregating 61,250 tons deadweight carrying capacity.

## Canadian Program Done

With the delivery of the 10,500 deadweight ton steamship Canadian Constructor to the Canadian Government Merchant Marine by the Halifax Shipyards January 7, the Canadian government's building program came to an end. Sixty-three vessels were built.

## Pacific Building

No seagoing steel merchant vessels were under construction on the Pacific Coast of the United States and Canada February 1, although the Bethlehem Shipbuilding Corporation, Union Plant, held contracts of the Ore Steamship Company for the construction of two 20,000 deadweight ton ore and coal carriers, the keels of which had not been laid. The last merchant vessels delivered were the 15,000-ton tankers H. M. Storey and W. S. Rheem, built by Bethlehem for the Standard Oil Company of California, which were turned over January 7 and January 30.

The following table shows number of vessels and aggregate deadweight tonnage under construction or contract on the Pacific Coast of the United States on the first day of each month of 1921 and the first two months of 1922:

| | Number Vessels | Aggregate D. W. |
|---|---|---|
| January | 57 | 598,500 |
| February | 49 | 516,160 |
| March | 44 | 487,270 |
| April | 40 | 449,670 |
| May | 35 | 389,870 |
| June | 28 | 310,790 |
| July | 23 | 259,890 |
| August | 17 | 200,290 |
| September | 13 | 162,490 |
| October | 10 | 129,350 |
| November | 6 | 85,750 |
| December | 4 | 70,000 |
| January | 4 | 70,000 |
| February | 2 | 40,000 |

The following table shows the number of vessels and deadweight tonnage of each class under construction January 1 and July 1, 1921, and February 1, 1922:

| | Jan. 1, 1921 | | July 1 | | Feb. 1, 1922 | |
|---|---|---|---|---|---|---|
| Freighters, U. S. S. B. | 11 | 106,150 | 4 | 44,000 | | |
| Tankers, U. S. S. B. | 7 | 67,800 | 5 | 50,200 | | |
| Tankers, private | 27 | 307,770 | 7 | 83,690 | | |
| Freighters, private | 3 | 34,500 | 2 | 40,000 | 2 | 40,000 |
| Tankers, foreign | 9 | 82,280 | 5 | 42,000 | | |
| | 57 | 598,500 | 23 | 259,890 | 2 | 40,000 |

## Pacific Deliveries

Cathay, freighter U. S. S. B., Kiangnan Dock & Engineering Works, at San Francisco, February 1.

W. S. Rheem, tanker Standard Oil Company of California, Bethlehem Shipbuilding Corporation, Union Plant, January 30.

Shawnee, cutter United States Coast Guard, Union Construction Company, February 17.

## Atlantic Launchings

Fort McHenry, tanker builder's account, Bethlehem Shipbuilding Corporation, Baltimore Drydocks Plant, February 1.

## Atlantic Deliveries

Steel Navigator, freighter United States Steel Products Company, Federal Shipbuilding Company, January 3.

J. Hampton Moore, fireboat City of Philadelphia, Merchant Shipbuilding Corporation, February 8.

Peninsula State, combination U. S. S. B., New York Shipbuilding Corporation, February 8.

Fireboat for City of Baltimore, Bethlehem Shipbuilding Corporation, Baltimore Drydocks Plant, December 19.

Macy Willis, tanker builder's account, Bethlehem Shipbuilding Corporation, Baltimore Drydocks Plant, January 14.

## Pacific Coast, United States

**All navy yard work is suspended or is progressing slowly.**

### BETHLEHEM SHIPBUILDING CORPORATION, LTD.

**Potrero Works**

Purchasing Agent: O. W. Streett.
Submarines USN: S-31, hull 136;

The tanker Fort McHenry, launched at the Baltimore Drydocks Plant, Bethlehem Shipbuilding Corporation, February 1. She is 354 feet 6 inches long overall, 340 feet between perpendiculars; 49 molded beam; 28 feet 7 inches molded depth; 23 feet 6½ inches loaded draft; will have a deadweight of 6050 tons, a speed of 10 knots; will be equipped with triple-expansion engines, 23 inches by 39 by 65, 42-inch stroke, developing 2000 indicated horsepower; two Scotch boilers, single-end, 15 feet 6 inches by 11 feet 5¾ inches, oil-burning. The Fort McHenry is built on the Isherwood system, with a straight stem and semi-elliptical stern. Her machinery will be aft. The cargo space will consist of fourteen main cargo oil tanks and eight summer oil tanks separated by oil-tight transverse and longitudinal bulkheads. A deep tank will be fitted between the pump room and forepeak for fuel oil, with the hold and tween-decks above available for dry cargo.

S-32, hull 137; S-33, hull 138; S-34, hull 139; S-35, hull 140; S-36, hull 141; S-37, hull 142; S-38, hull 143; S-39, hull 144; S-40, hull 145; S-41, hull 146; all launched; outfitting proceeding slowly.

### Alameda Works

Chilore, hull 5309, combination ore and coal carrier Ore Steamship Co; 571-6 LOA; 550-1 LBP; 72 molded beam; 44 molded depth; 32-4 loaded draft; 11½ loaded speed; 20,000 DWT; Curtis turbines with Falk reduction gears, 5000 SHP; 3 Scotch SE boilers, 17-6x12, each 4287 sq ft; oil burners.

Lebore, hull 5310, combination ore and coal carrier Ore Steamship Co; sister to above.

W. S. Rheem, hull 5313, tanker Stand Oil Co of Cal; 500 LBP; 68 beam; 25-11 loaded draft; 11 loaded speed; 15,000 DWT; rec engs, 4000 IHP; 3 Scotch marine boilers, 16x12-9; keel Mar1/21; launch Oct28/21; **deliver Jan30/22.**

No name, hull 5314, ferryboat Jas Rolph & Co; 230 LOA; 63-6 beam over guards, 42 molded; 19-6 molded depth; TE eng, 1400 IHP; propeller drive; 3 WT boilers; keel Aug27/21.

No name, hull 5315, ferryboat Jas Rolph & Co; sister to above.

No name, hull 5316, ferryboat Jas Rolph & Co; sister to above.

### HANLON DRYDOCK & SHIPBUILDING CO., OAKLAND

Purchasing Agent: R. Barker.

Dan F. Hanlon, hull 89, steam schr. D. J. Hanlon; 2500 DWT; 1400 IHP engines; 2 B&W boilers; work suspended.

### NAVY YARD, PUGET SOUND

Medusa, repair ship for government; 460 LBP; 70 beam; about 19 loaded draft; 17-5 loaded speed; turbine eng, 7000 IHP; 2 WT express type boilers; 10,000 tons disp; keel Jan2/20; launch and deliver dates not set.

Holland, submarine tender for government; 460 LBP; 61 beam; about 20 loaded draft; 16 K loaded speed; turbine eng, 7000 IHP; two WT express type boilers; 10,000 tons disp; keel Apr11/21.

### NAVY YARD, MARE ISLAND

Montana, battleship USN; 660 LBP; 105 beam; 33 loaded draft; 23 loaded speed; 42,200 disp; turbo-electric engs, 60,000 SHP; 12 Bu's express boilers, 74,040 sq ft; keel Sept 1/20.

Trevor, destroyer USN; 310 LBP; 30-11½ beam; 9-4 loaded draft; 35 loaded speed; 1215 disp; geared turbine eng, 26,000 SHP; 4 Normand boilers, 27,000 sq ft; keel Aug12/19; launch Sept15/20.

Perry, destroyer USN; sister to above; keel Sept15/20; launch Oct 29/21.

Decatur, destroyer USN; sister to above; keel Sept15/20; launch Oct 29/21.

### TODD DRYDOCK & CONSTRUCTION CORP., TACOMA

Purchasing Agent: C. L. Bankson.

Omaha, hull 100, scout cruiser USN; 555-6 LOA; 550 LBP; extreme beam 55-4; molded beam 54-9; depth molded 26; mean loaded draft 13-6; disp 7100 tons; Westinghouse Parsons turbines and reduction gear, 105,000 IHP; designated speed 34; 12 Yarrows WT boilers; keel Dec6/18; launch Dec14/20.

Milwaukee, hull 106, scout cruiser USN; sister to above; keel Dec13/18; launch Mar24/21.

Cincinnati, hull 107, scout cruiser USN; sister to above; keel May15/20; launch May23/21.

### UNION CONSTRUCTION CO., OAKLAND

Purchasing Agent: A. J. Farnesworth.

Shawnee, hull 20, cutter USCG; 150 LOA; 30 beam; 13-6 loaded draft; 12½ loaded speed; 1000 DWT; rec engs, 1000 IHP; 2 WT boilers; keel Jun1/21; launch Nov15/21; **deliver Feb17/22.**

## Canadian

### CHOLBERG SHIPYARD, VANCOUVER, B. C.

Purchasing Agent: W. Meed.

(These vessels to be completed by Dominion government.)

Sir Henry Drayton, hull 5, 4-masted barkentine Victoria Shipowners, Ltd; 250 LOA; 45-6 beam; 21-10 loaded draft; 2400 DWT; sailing vessel; shaft logs fitted for auxiliary but no machinery installed; keel May 15/20.

No name, hull 6, 4-masted barkentine Victoria Shipowners, Ltd; sister to above; keel June4/20.

No name, hull 7, 4-masted barkentine Victoria Shipowners, Ltd; sister to above.

## Atlantic, Gulf and Lakes

### AMERICAN BRIDGE COMPANY, PITTSBURGH, PENN.

Purchasing Agent: W. G. A. Millar.

Twenty-five coal barges Carnegie Steel Co; 175 LBP; 26 beam; 8 loaded draft; all delivered.

Two tow boat hulls Carnegie Steel Co; 149-2x34 4-5 loaded draft; both delivered.

Fifteen decked barges, 120 LBP; 30 beam; 7 deep; US Engineers, Memphis, Tenn.

Two decked barges, undisclosed interests, 150x32x7-6; launch Mar/22, est.

Twelve sand barges, J. K. Davison & Bro., Pittsburgh, 135 x 26 x 10; launch Mar, Apr, May/22, est.

Two sand barges, H. H. Halliday Sand Co., Cairo, Ill.; 130x30x7-6; launch May/22, est.

### BATH IRON WORKS, LTD., BATH, MAINE

Purchasing Agent: John L. P. Burke.

Light vessel 106, hull 87, second-class light vessel US Dept of Commerce, 109-6 LBP, 30 beam, 14-4 loaded draft, 9½ speed; comp eng, 400 IHP; 2 Scotch boilers, 10-6 x 11-4; keel Apr1/22, est; launch Oct/22, est; deliver Dec/22, est.

Light vessel 107, hull 88, sister to above; keel May1/22, est; launch Nov/22, est; deliver Jan/23, est.

Light vessel 108, hull 89, sister to above; keel June1/22, est; launch Jan/23, est; deliver Mar/23, est.

Light vessel 109, hull 90; sister to above; keel July1/22, est; launch Mar/23, est; deliver Apr/23, est.

Light vessel 110, hull 91, sister to above; keel Aug1/22, est; launch May/23, est; deliver June/23, est.

### BETHLEHEM SHIPBUILD'G CORPORATION, BALTIMORE DRYDOCK PLANT, BALTIMORE

Fort McHenry, hull 125, tanker builder's account; 340 LBP; 49 beam; 23-6 loaded draft; 10 loaded speed; 6000 DWT; rec eng, 2000 IHP; 2 Scotch boilers, 15-3; keel Nov24/20; **launch Feb1/22;** deliver Apr1/22, est.

Macy Willis, hull 126, tanker builder's account; 430 LBP; 59 beam; 25-4½ loaded draft; 10 loaded speed; 10,250 DWT; turb eng, 3000 IHP; 3 Scotch boilers, 15-3; keel Sept27/20; launch Dec22/21; **deliver Jan14/22.**

Hull 128, fireboat City of Baltimore; 115-6 LBP; 28 beam; 9-6 loaded draft; 12 loaded speed; rec eng, 1000 IHP; 2 B&W WT boilers; keel July15/21; launch Oct22/21; **deliver Dec19/21.**

### BETHLEHEM SHIPBUILDING CORP., FORE RIVER PLANT, QUINCY, MASS.

Lexington, hull 1300, battle-cruiser USN.

Raleigh, hull 1382, scout cruiser USN.

Detroit, hull 1383, scout cruiser USN.

Massachusetts, hull 1400, battleship USN.

And the following nineteen submarines USN: AA-2, hull 1270; hulls 1309 to 1320 inc, submarines S-18 to S-29 inc; hulls 1389 to 1394 inc; submarines S-42 to S-47 inc.

### BETHLEHEM SHIPBUILDING CORP., HARLAN PLANT, WILMINGTON, DEL.

R. D. Leonard, hull 3477, tanker Atlantic Refining Co; 226 LBP; 39 beam; 17 loaded draft; 8½ loaded speed; 2600 DWT; turb eng, 750 IHP; B & W boilers; keel Aug20/21; launch Dec31/21.

### BETHLEHEM SHIPBLDG. CORP., SPARROWS POINT PLANT, SPARROWS POINT, MD.

Palmetto State, hull 4196, combination USSB; 518 LBP; 72 beam; 30-7 loaded draft; 16 loaded speed; turb eng, 10,000 IHP; 8 Yarrows boilers; keel Feb19/19; launch June 4/21.

Nutmeg State, hull 4197, combination USSB; sister to above; keel July29/20; launch Sept17/21.

Bethore, hull 4211, ore and oil Ore SS Co; 550 LBP; 72 beam; 32-4 loaded draft; 11½ loaded speed; 20,000 DWT; rec eng, 4600 IHP; 3 Scotch boilers, 17-6x12; keel Feb 24/21; launch Dec3/21.

Marore, hull 4212, ore and oil Ore SS Co; sister to above, except turb eng; keel May2/21.

Steelore, hull 4213, ore and oil Ore SS Co; sister to above; keel July 20/21.

### CONSOLIDATED SHIPBUILDING CORPORATION, MORRIS HEIGHTS, N. Y.

Purchasing Agent: Bruce Scrimgeour.

Lightship No. 105, US; hull 246; 146-3 LOA; 30 beam; 12-7 loaded draft; 825 DWT; comp eng, 400 IHP; 2 Scotch boilers, 10-6 diam; keel Mar4/21; launch Nov16/21; deliver Mar or Apr/22, est.

### WILLIAM CRAMP & SONS SHIP & ENGINE BUILDING CO., PHILADELPHIA

Purchasing Agent: Ed. C. Geehr.

Richmond, hull 448, scout cruiser USN; keel Feb16/20; launch Sept 29/21; 85 per cent comp Feb 1.

Concord, hull 449, scout cruiser USN; keel Mar29/20; launch Dec 15/21; 82 per cent comp Feb 1.

Trenton, hull 501, scout cruiser USN; keel Aug18/20; 57 per cent comp Feb 1.

Marblehead, hull 502, scout cruiser USN; keel Aug4/20; 47 per cent comp Feb 1.

Memphis, hull 503, scout cruiser USN; keel Oct14/20; 40 per cent comp Feb 1.

Installing Diesel engines in M.S. Californian.

### OSCAR DANIELS COMPANY, TAMPA, FLORIDA

B. D. Benson, hull 11, Isherwood tanker Standard Oil; 466 LBP; 60 beam; 26-7 loaded draft; 10½ loaded speed; 11,900 DWT; QE eng, 2800 IHP; 3 Scotch boilers, 15x11-6; keel June29/20; launch Sept5/21.

### FEDERAL SHIPBUILDING CO., KEARNY, N. J.

Purchasing Agent: J. L. Hastings.

Steel Navigator, hull 45, freighter US Steel Products Co; 425 LBP; 56 beam; 25-10 loaded draft; 12 loaded speed; 9400 DWT; turb engs, 3100 IHP; 3 Scotch boilers, 15 diam; keel July/21; launch Dec17/21; **deliver Jan3/22.**

Hull 68, freighter undisclosed interests; 425 LBP; 56 beam; 27 loaded draft; 11½ loaded speed; 10,025 DWT; Parsons turbines, 3100 SHP; 3 Scotch boilers, 15-3x11-3¾; keel Mar1/22, est; launch Aug1/22, est; deliver Sept1/22, est.

### LAKE TORPEDO BOAT CO., BRIDGEPORT, CONN.

Purchasing Agent: C. D. Maxfield.

S-48, hull 48, submarine USN; launch Feb26/21.

S-49, hull 49, submarine USN; launch Apr23/21.

S-50, hull 50, submarine USN; launch June18/21.

S-51, hull 51, submarine USN; launch Aug20/21.

### MERCHANT SHIPBUILDING CORPORATION, CHESTER, PENN.

Vice-President: J. L. Ackerson.

Californian, hull 385, freighter American-Hawaiian SS Co; 445 LBP; 59-8 beam; 28-6 loaded draft; 11½ speed; 11,000 DWT; 2 6cyl, 4-cycle Diesel engs, 4500 metric; 1 vertical donkey, 400 sq ft HS; keel Feb5/21; launch Nov14/21; at Cramp yard for installation of Diesel engines.

Missourian, hull 386, freighter American-Hawaiian SS Co; sister to above; keel Feb10/21; launch Dec 14/21.

J. Hampton Moore, hull 387, fireboat City of Phila; 120-9 LOA; 28 beam; 12-9 deep; 9 loaded draft; comp eng, 500 IHP; 2 B&W WT boilers, oil; 4 turbine fire pumps, 1 30-foot tower, 2 15-foot towers; capacity 12,000 gals a minute; keel Sept 15/21; launch Dec20/21; **deliver Feb 8/22.**

### NAVY YARD, BOSTON

Whitney, destroyer tender No. 4 USN; 460 LBP; 60-10⅛ molded beam; 21-0½ normal draft; 16 loaded speed; 10,600 normal disp; geared Parsons turbs, 7000 SHP; 2 WT exp boilers; keel Apr 23/21; launching indefinite.

### NAVY YARD, PHILADELPHIA

Dobbin, hull 7, destroyer tender USN; 460 LBP; 60-10 beam; 21 loaded draft; 16 loaded speed; 10,600 tons disp; Parsons geared turb single screw engs, 7000 SHP; 2 WT boilers; keel Dec23/19; launch May 5/21; deliver date not determined.

Constitution, hull 8, battle cruiser USN; 850 LBP; 105-4 beam; 30-11½ loaded draft; 33½ loaded speed; 43,500 disp; electric drive, 180,000SHP; 16 WT boilers; keel Sept25/20.

United States, hull 9, battle cruiser USN; 850 LBP; 105-4 beam; 30-11½ loaded draft; 33½ loaded speed; 43,500 disp; electric drive, 180,000 SHP; 16 WT boilers; keel Sept25/20.

### NEWPORT NEWS SHIPBUILDING & DRYDOCK COMPANY, NEWPORT NEWS

Purchasing Agent: James Plummer, 233 Broadway, New York City.

West Virginia, hull 211, battleship USN; 600 LBP; 97-3½ beam; 30-6 mean draft; 32,600 normal disp; 21 speed; GE turbo-elec drive, 28,900 SHP; 8 B&W WT boilers, oil, 41,768 sq ft plus 4168 superheat; keel Apr 12/20; launch Nov19/21.

Constellation, hull 215, battle-cruiser USN; 850 LBP; 101-8¼ beam; 31 mean draft; 43,500 normal disp; 33¼ speed, est; Westinghouse turbo-elec drive, 180,000 SHP; 16 WT boilers, oil, 198,000 sq ft plus 18,000 superheat; keel Aug18/20.

Ranger, hull 215, battle-cruiser USN; sister to above; keel June23/21.

Iowa, hull 258, battleship USN; 660 LBP; 105 beam; 33 mean draft; 43,200 normal disp; 23 speed; GE turbo-elec drive, 60,000 SHP; 12 White-Forster WT boilers, oil, 82,800 sq ft plus 8940 superheat; keel May17/20.

Delphine, hull 263, Diesel yacht Cox & Stevens; 180-6 LOA; 24 beam; 14 deep; keel not laid.

### NEW YORK SHIPBUILDING CORPORATION, CAMDEN, N. J.

Purchasing Agent: L. G. Buckwalter.

Peninsula State, hull 252, combn USSB; 534 LBP; 72 beam; 30-6 loaded draft; 18 loaded speed; 11,000 DWT; geared turbs, 12,000 SHP; 8 WT boilers; keel July20/20; launch July6/21; **deliver Feb8/22.**

Eurana, hull 264, bulk oil stock; 419-3 LBP; 56-3 beam; 25-9¼ loaded draft; 10¾ loaded speed; 9870 DWT; 3 cyl TE engs, 3000 SHP; 3 SE Scotch boilers, 15-10x11-4; keel Jan17/21; launch July16/21.

No name, hull 265, bulk oil stock; sister to above.

Saratoga, hull 199, battle cruiser USN; 874 LOA; 850 LBP; 105-5¼ extreme beam; 31 mean draft; 43,500 normal disp; 33¼ loaded speed; GE turbo-electric drive; 180,000 SHP; 16 WT boilers, 198,000 sq ft plus 18,000 superheat; keel Sept25/20.

Colorado, hull 200, battleship USN; 624 LOA; 600 LBP; 97-3½ beam waterline; 30-6 mean draft; 32,600 normal disp; 21 loaded speed; Westinghouse turbo-electric drive, 28,900 SHP; 8 B&W WT boilers, 41,678 sq ft plus 4169 superheat; keel Mar29/19; launch Mar22/21.

Washington, hull 201, battleship USN, sister to above; keel June30/19; launch Sept1/21.

Kamoi, hull 267, fuel ship Japanese Navy; 497-8 LOA; 67 beam; 28 designed draft; 15 loaded speed; 13,000 DWT; elec drive, 8000 SHP; 4 B&W boilers; keel Sept14/21.

Hull 268, carfloat Brooklyn Eastern District Terminal; 340 long.

### PORT ARTHUR SHIPBUILDING CO., PORT ARTHUR, ONT.

Purchasing Agent: W. E. Decker.

Hull 47, single-deck bulk freighter Mathews Steamship Co; 530 LBP;

58 beam; 12 loaded speed; 10,000 DWT; 3-cyl TE engs, 25½-41-67x42, 2100 IHP; 3 Scotch boilers, 13-6; keel not laid.

### STATEN ISLAND SHIPBUILDING COMPANY, STATEN ISLAND, NEW YORK

Purchasing Agent: R. C. Miller.

Hell Gate, hull 728, dredge V. R. Browning; 140 LBP; 48 beam; 15 loaded draft; keel Aug28/20; launch Feb23/21.

### SUN SHIPBUILDING COMPANY, CHESTER, PENN.

Purchasing Agent: H. W. Scott.

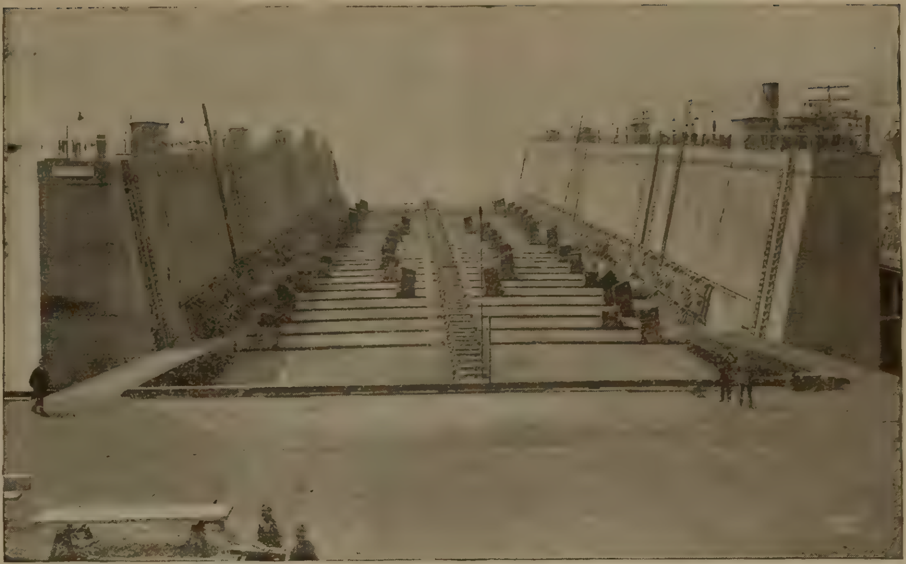
Agwiscot, hull 42, tanker A. G. W. I. S. Co; 480 LBP; 65-9 beam; 26-7 loaded draft; 12 loaded speed; 12,500 DWT; single screw QE engs, 4300 IHP; 4 SE Scotch boilers, 15-10 x11-11¼; keel Dec23/20.

Agwistates, hull 43, tanker A. G. W. I. S. Co; sister to above; keel Jan3/21.

No name, hull 46, tanker Sun Oil Co; 480 LBP; 65-9 beam; 26-7 loaded draft; 10½ loaded speed; 12,800 DWT; single screw QE engs, 4300 IHP; 3 SE Scotch boilers, 15x11-11¾; keel not laid.

No name, hull 47, tanker Sun Oil Co; sister to above; keel not laid.

## The New Todd Dock



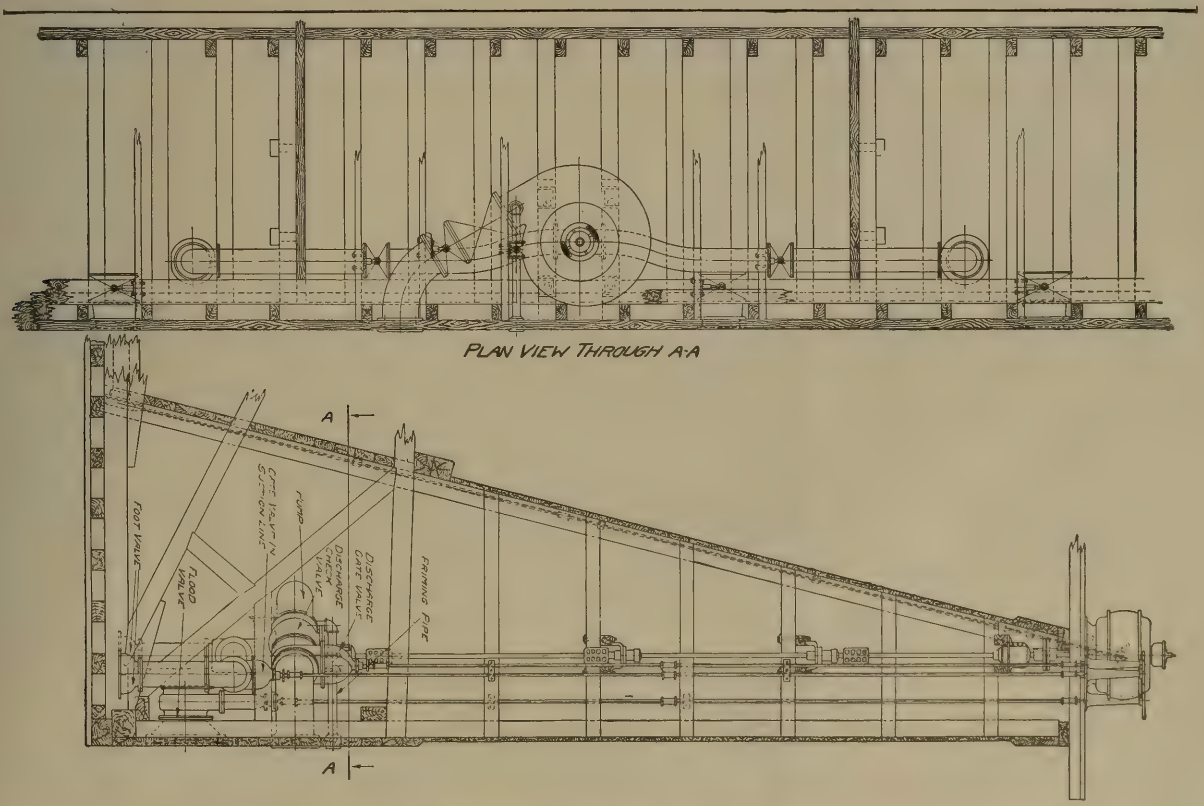
The new Todd drydock, Seattle

The large floating dock operated by Todd Drydocks, Inc., Seattle, built in 1917 and at present composed of four sections, is to be lengthened at once by the addition of another section, giving a capacity for vessels approximately 550 feet long and a lifting capacity for the enlarged dock of about 15,000 tons. The entrance breadth of the dock is 98 feet 6 inches.

As in all other modern floating docks built by the Todd organization, two unwatering pumps are used in each section, one on each side, the pontoons being divided by bulkheads into six compartments, in each of which is located a foot valve with connecting piping to the pump suction.

This arrangement with a flood valve in each compartment gives adequately flexible control and is found in practice to be more satisfactory than more complicated unwatering and control arrangements. From the sectional drawings it will be noted that a 4-inch priming pipe is connected to each pump casing at a level, always insuring priming each main pump even if the pontoons are unwatered below level of pumps.

Special features of the intermediate shafting connecting the pumps with the motors on the wing decks are the use of self-aligning guide bearings, special grip couplings and



Arrangement of pumps in Todd dock

ball thrust bearings just below the wing decks, carrying the weight of all moving parts of pump and shafting, which amounts to 2700 pounds for each pump, the motor rotors being carried on separate thrust bearings located at top of motor housings.

Each of the 20-inch vertical shaft pumps built by the Alberger Pump & Condenser Company of New York is driven by General Electric Company 100 H. P., 290 R. P. M. motors, and the enlarged five-section dock section, having two pumps to the section, can therefore be unwatered at the rate of from 187,500 gallons a minute at zero difference in water level inside and outside dock (static pumping head), which prevails when the pumps are started to about 90,000 gallons a minute when the static pumping head reaches its ordinary maximum of about 28 feet. The capacity curve shown covers the performance of each of the two pumps used in each section.

## The Leviathan Award

At a special meeting of the Shipping Board February 15, a contract was awarded to the Newport News Shipbuilding & Drydock Company for refitting the Leviathan. This action of the board not only makes it certain that the work will be done, but also disposes of the single obstacle in the way of the award to Newport News: the struggle made by the Boston Navy Yard to obtain the work. The history of that effort, beginning with a plan of navy yard employes to subscribe to a fund to guarantee that the cost of reconditioning the vessel would not exceed the estimate (the yard not having power to enter into a contract) and ending with the fight made in Washington by Senator Lodge, is too well known to need recounting.

### To Cost $8,200,000

A formal announcement by the board was as follows:

"The board stated that the approximate cost of placing the giant liner in commission would be $8,200,000. Of this amount the shipbuilders have been given contracts for $6,110,000: for reconditioning and conversion of the vessel to burn fuel oil, $5,595,000; and for repairs and machinery, $515,000.

"Gimbel Brothers of New York were awarded the contract for the equipment of the steward's department and for a library, the price being $551,000.

"Gibbs Brothers, engineers, New York, were retained by the board to supervise the reconditioning of the ship, their fee being $182,000. William Francis Gibbs of this firm was formerly chief engineer in charge of construction for the International Mercantile Marine Company of New York, but severed his connection with that corporation to join with his brother, Frank H. Gibbs, in forming a new company to supervise the work. They will employ a staff of assistants. In awarding this contract the board made a saving of $28,000, as the I. M. M. was to receive the sum of $210,000, according to the terms of a contract it had with the board. This contract was recently cancelled by mutual consent.

### Some Other Expenses

"The balance of the $8,200,000—namely, $1,357,000—will be expended for moving the ship to the contractor's yard, insurance covering this removal, new anchors and chains, moving of ship to drydock, drydocking, trial trip, and maintenance and guarding of ship for fourteen months during reconditioning.

"Work on the Leviathan will be started immediately and she will proceed at once under her own steam to the shipyard at Newport News. The contract was signed this afternoon, Joseph W. Powell, president of the United States Shipping Board Emergency Fleet Corporation, affixing his signature for the government, and Homer Ferguson, president of the Newport News Shipbuilding & Drydock Company, signing for his corporation.

"As soon as she has been reconditioned at the Virginia plant the Leviathan will be taken to the Boston Navy Yard, where she will be drydocked and her bottom scraped and painted.

### Navy Could Not Bid

"At the time bids were asked for last November on this vessel, the secretary of the navy stated that his department did not have an appropriation to prepare an estimate, did not have the facilities to carry out this type of work, and could not submit a bid upon which a binding contract could be made. For these reasons the Navy did not figure on the work. Secretary Denby reaffirmed his position in a conference with Chairman Lasker of the Shipping Board yesterday.

"The board was obliged to award the contract today to the Newport News Shipbuilding & Drydock Company because:

"1. February 15 had been fixed months ago as the last day when the bids put in by the competing contractors would remain open.

"2. The bids were taken at the low dip of the market and undoubtedly if new bids were taken again a considerable increase in the estimates, probably more than a million dollars, would result.

### President Approves Award

"3. If the matter were put over until the Navy could submit an estimate, which it has informed the board is not desirable or practicable, it would take that department at least sixty days in which to prepare an estimate, as it occupied that period of time for the successful contractor, at a cost of $30,000, to make up its proposal. If the Navy therefore was to bid on this work now it would mean the loss of the spring and summer trade in 1923, which in money would amount to more than a million dollars, which, in addition to increased costs, would greatly raise the total.

"4. The Newport News Shipbuilding & Drydock Company were the lowest bidders.

"The President, Chairman Wesley L. Jones of the Senate committee, Chairman William S. Greene of the House committee on merchant marine affairs, have approved the action of the Shipping Board in awarding the contract to the Virginia corporation."

## The Asche Repairs

The steamship F. D. Asche was built in 1918 at the plant of the Newport News Shipbuilding & Drydock Company for account of the Standard Oil Company of New Jersey. She is a shelter-deck, bulk-oil steamship of 12,000 tons deadweight, 463 feet 3 inches in length, 60 feet in beam and 37 feet 2 inches deep to shelter-deck, built on the Isherwood longitudinal system. The propelling machinery is located in the after end and consists of a quadruple-expansion engine and three 3-furnace Scotch boilers. Although during construction the vessel was subject to the war requisition order of the Emergency Fleet Corporation, upon delivery she was operated for the account of her present owners in the oil-carrying trade. She continued in this trade until the latter part of October, 1921, when she was driven by storm over a coral reef of the Bahama Islands, suffering extensive bottom damage. First reports indicated she was beyond repair, but she was floated November 11. Her subsequent dry-docking for survey at Erie Basin has been described in a previous article.

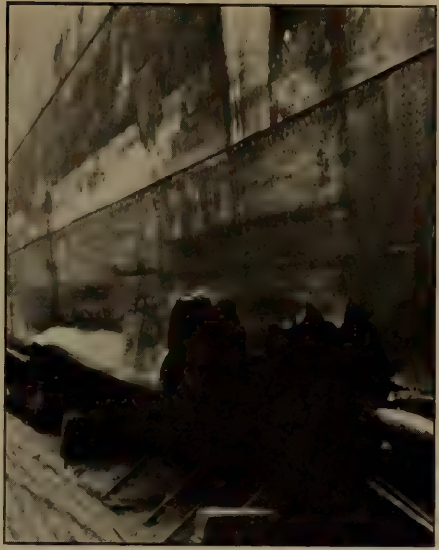
### How She Was Docked

On January 18, three years and one month after being delivered by her builders, the vessel was redelivered to the Newport News shipyard for repairs. For the trip down the coast the ship was sustained by air-pressure in her tanks, and her machinery was operated with the high pressure cylinder cut out. The drydocking of the vessel in a position best suited for carrying out the extensive repairs to the underwater structure was a noteworthy event. Measurements taken by the repair contractors in the course of estimating on the repairs enabled them to make special preparations in the drydock to receive the ship. Positions were found for a sufficient number of blocks under the straighter portion of the keel and for eight structures of side-cribbing, leaving open the sections where the placing of new material was to begin. The ship was hauled in the drydock at 11:40 a. m. on the day of her arrival at the yard and five hours later the dock floor was clear of water, when upon examination the weight was found to be distributed in a satisfactory manner and the vessel ready for repairs to begin. The dock used for this job is of the graving type, 536 feet long, 147 feet wide at the top and 62 feet wide at the bottom, affording excellent accommodations of space for working and handling material.

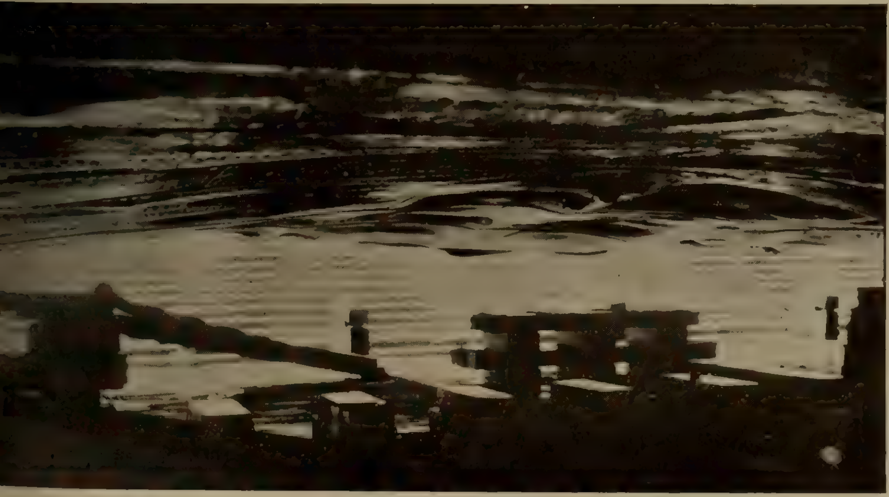
### Extent of Damage

The damage extended throughout the bottom of the vessel and through the bilges on both sides. Over large areas the bottom was crushed in from two to three feet, and more in some places, from its original position. In addition to a large opening on the starboard side, the shell was punctured in numerous widely separated places from the bow to the far stern. The lower end of the stem was badly twisted, making its renewal necessary. The lower portion of the stern frame was broken and the rudder and steam tiller disabled.

The damage to the hull in way of the machinery aft resulted in impaired alignment of the main engine and many of the auxiliary machines, particularly those on the starboard side. Auxiliary machines requiring new foundations were removed from the vessel and are being reconditioned in the shops while others are being repaired in place. The main engine, after being stripped of the parts to be reconditioned in the shops, was blocked up to facilitate repairs to the hull structure. It was found unnecessary to remove the boilers from the ship, for by blocking them up sufficient space could be gained to permit the structure under them to be repaired.


The Asche from alongside

A noticeable feature of the damage was at the points of greatest displacement of the flat keel the damage extended in parallel troughs for the entire width of the vessel. While in some places the plating in these troughs remained fairly smooth, other places showed shorter and less regular curvatures, which resulted in many plates being torn and some seams opened.


Extent of damage to Asche's bottom

Examination of the character of damage to the internal structure showed that, while the flat keel was bent for practically its entire length and in many places twisted to a sharply oblique position, it was not noticeably displaced in an athwartship direction. The compression of the flat keel was taken up almost entirely in the lower strake of the centerline bulkhead, which forms the vertical keel in the form of accordion folds and loops. Similar conditions prevailed for many of the athwartship bulkheads, making in the aggregate an unusual amount of closely crumpled scrap material. This material, with the attached plates and stiffeners, was cut away in sections of suitable width for loading on flat cars and removed by traveling cranes on either side of the dock. The cutting away of this damaged material in its heavily-coated condition represents a task comparable to the cutting up of some of the earlier type warships. About 350,000 cubic feet of oxygen gas will be used for this work.

The sight of such a large amount of shapeless steel wreckage was greatly relieved when on the first day of February sections of new flat and vertical keels were placed in position on carefully faired keel blocks much the same as at the beginning of the construction of a new ship. The preparation of the material in the shops is carried on much the same as for a new ship, for of the 800 tons of new plates and shapes used about 90 per cent is being prepared and punched in the shops from the original plans and mold-loft templets.

It will be recalled that the Newport News yard was the lowest bidder on reconditioning the steamship Leviathan, including repairs and alterations to machinery, when bids opened in New York on December 30, 1921. The bidding on that work, manifestly the largest wet basin repair job ever proposed, together with the unprecedented drydock work now under way on the F. D. Asche, gives a good indication of the remarkable facilities possessed by this yard.

## Warship Scrapping

Considerable attention is being paid by shipbuilders to the stoppage of work on naval vessels that are to be scrapped under the Pacific treaty. Although the Senate has not approved the treaty, and therefore the agreement has not become effective formally, there is general expectation that approval is certain. As a result, the New York Shipbuilding Corporation has laid off 1200 men, orders having been received from Washington to stop work on the battle-cruiser Saratoga and battleship Washington. The fate of the latter vessel is in doubt, as the West Virginia, building at Newport News, may be completed and, with the Colorado, under construction by New York Ship, go to offset the Japanese battleship Mutsu. In any event, two of the three battleships will be finished.

### Capital Ships to be Broken Up

The following vessels, in addition to the Washington or West Virginia, will be scrapped: battleship Iowa and battle-cruisers Constellation and Ranger, Newport News Shipbuilding & Drydock Company; battleship Massachusetts and battle-cruiser Lexington, Bethlehem Shipbuilding Corporation, Fore River Plant; battle-cruiser Saratoga, New York Shipbuilding Corporation; battleships Indiana and South Dakota, New York Navy Yard; battleship North Carolina, Norfolk Navy Yard; battle-cruisers United States and Constitution, Philadelphia Navy Yard; battleship Montana, Mare Island Navy Yard; totals, seven battleships and six battle-cruisers.

At the middle of February navy yards and other government plants had laid off 4268 men, as follows: Norfolk, 118; Washington, 1350; New York, 400; Philadelphia, 450; Mare Island, 1500; South Charleston, 450. The Navy Department regards as impracticable suggestions that employes who were laid off be re-employed to scrap the vessels. Most of the work of scrapping could be done by unskilled labor, it was said. No provision was made in the recent Navy budget for dismantling the thirteen still under construction. Work of dismantling the Michigan, built in 1906, will be begun soon at the Philadelphia Navy Yard.

### Japan Ceases Work

Japan has ordered work suspended on the following, according to dispatches from the Orient: one 42,600-ton battleship, Yokosuka Navy Yard; one 42,600-ton battleship, Kure Navy Yard, materials for both of which had been assembled; 39,900-ton battleship Kaga, launched by Kawasaki in November; 39,900-ton Tosa, launched by Mitsubishi, Nagasaki, in December; 44,000-ton battle-cruiser, keel laid by Kawasaki in November; 44,000-ton battle-cruiser, keel laid by Mitsubishi in December. These vessels are the only post-Mutsu craft under construction.

Because of the stoppage of naval work and the depression in merchant building, it is reported that the important Japanese yards are considering some sort of amalgamation. Details will be awaited with interest. The following companies are represented as taking part in negotiations: Kawasaki, Mitsubishi, Yokohama Dock, Uraga, Hakodate, Asano, Kobe Steel, Osaka, Yokohama Engineering Works.

## A Black Eye for Concrete

When the concrete tanker Selma struck Tampico breakwater in May, 1920, she prepared for the Shipping Board an unusual problem. What disposition should be made of her? The board considered the problem after this fashion:

"Were the vessel of a size and character to be adaptable to use exclusively on inland waters it might prove feasible to repair it, but it is so badly damaged that to attempt to put it into shape to meet the rigors of ocean service would cost so much as to be prohibitive, in view of the small tonnage value it would have in comparison with steel vessels, of which there exist a surplus. To demolish the hulk would cost an enormous sum, as it would be necessary to use air hammers to smash the concrete and acetylene torches to cut up the network of steel reinforcing bars. These bars are so solidly embedded in concrete as to render useless any attempt to salvage the vessel by such means. Were the vessel constructed of steel throughout it could be broken up readily and sold as junk. With the possibilities of practically repairing or salvaging the vessel eliminated, getting rid of it in such a manner as not to constitute a menace to navigation has presented a problem. The suggestion has been made that it be sunk, but to do this in such a way as not to constitute a possible interference with navigation would necessitate towing the vessel out to sea to a point approximately seventy-five miles from Galveston. To tow the boat out it would be necessary to sustain it with compressed air in order to make it float, owing to its damaged condition. It is doubtful that the vessel could be taken so far in such a manner in its present condition without the risk of sinking en route."

Finally A. J. Frey, in charge of operations, decided that the vessel should be beached at Galveston and left there. The different considerations involved and the disposition of the vessel cast more light upon concrete as shipbuilding material.

## American Bureau Meeting

At the annual meeting of the American Bureau of Shipping, held in New York January 31, Stevenson Taylor and Captain C. A. McAllister were re-elected president and senior vice-president, and other officers were re-elected. G. P. Taylor, in addition to being re-elected treasurer, was made vice-president to succeed the late Commodore Bertholf. William Francis Gibbs and Theodore Wells were made members of the sub-committee on naval architecture. A new sub-committee on internal combustion engines, to consist of Dr. C. E. Lucke and Messrs. Rutter, Cooke and West, was created.

Commander Taylor said that, whereas the bureau had only 8½ per cent of American classified vessels under its supervision when it was reorganized in 1916, it now has approximately 80 per cent of the United States classified total of 12,841,980 gross tons.

## In the Yards

Cox & Stevens, naval architects and marine engineers, announce their removal from 15 William Street, New York City, to the new Cunard building, 25 Broadway, effective March 1.

The Prince Rupert drydock and shipbuilding and repair plants, owned and controlled by the Grand Trunk Pacific Railway until ship construction was commenced, have been taken over by the Canadian government with the apparent intention of operating these in connection with the Grand Trunk Pacific Railway and the Grand Trunk Pacific Steamship Company, both of which are now under control of the Canadian National Railway and are making Prince Rupert a terminal point, Consul E. A. Wakefield reports. The shipbuilding plant has two ways of sufficient size to permit construction of large ships. The drydock, in three sections, is capable of lifting 20,000 deadweight tons when the sections are combined and can accommodate a number of ships of medium size. The ship-repair plant is said to be as complete as any on the Pacific Coast and includes a machine shop, two covered shipbuilding sheds, a foundry, blacksmith shop and power house.

Reports are current in shipping and shipbuilding circles that the Todd Shipyards Corporation is considering a further extension of its activities by the acquisition of additional shipbuilding plants, says the bulletin of the Atlantic Coast Shipbuilders' Association. It is reported that the Todd interests are considering the purchase of a Delaware River plant, and that they have obtained an option on the yard and repair plant of the Henderson Shipbuilding Company, Mobile. On the other hand, C. W. Wiley, president of the Todd Drydocks, Seattle, denies that the Bethlehem Shipbuilding Corporation is about to buy the Todd plants on the Pacific.

The Shipping Board announces that Chairman Lasker has suggested to the President, and that the President has approved, a plan to give the claims commission power to make final awards, so that the board would not be compelled to pass upon the work of the commission. "This will relieve the board of the great burden of time and responsibility required by it to pass upon these awards and obviate the necessity sometimes of a dual argument of the case, and will expedite claimants getting their money if the current appropriation bill is passed," says a statement issued by the board. Congressional approval of the plan is necessary and will be sought.

The Bethlehem Shipbuilding Corporation announces that the Southwestern yard at Los Angeles will be operated under the name of the San Pedro Works, Union Plant. A 12,000-ton drydock will be in operation by the end of March. The San Pedro Works will have Foamite Firefoam rights in its district.

The Shipping Board has decided to offer for sale a number of floating drydocks. The first sale will include three docks, each of 12,000 tons lifting capacity, recently delivered to the Shipping Board at Tiverton, Rhode Island, and Mill Basin, Brooklyn. The sale is to be on the basis of a substantial cash payment, with the remainder of payments to be made over a period of years. These docks, which were built in accordance with the Emergency Fleet Corporation's design and under the supervision of its engineers, represent the most advanced ideas in wood drydock construction. They are of the 5-pontoon, sectional type, with all operating pumps fitted with independent electrical drive and arranged for distant control. Although there is comparatively very little activity in the ship repair business at present, it is believed that those who are looking ahead will not fail to take advantage of this opportunity to secure one or more of these docks at reasonable prices and under favorable terms.

Shipyards and ship-repair plants in the New York district February 15 reduced hourly wage rates approximately 10 per cent, this being the second reduction of that amount by the same companies within a year. The new maximum basic rate of 64 cents an hour for skilled labor and intermediate rates of 52 and 44 cents for second and third class mechanics in the port of New York is substantially the same as that formerly paid in the Delaware River district before a further reduction of 10 per cent was made effective by five of the big Delaware River shipyards and a number of smaller plants in the same district. With the exception of New York practically every northern shipyard making wage readjustments since January 1 has adopted a maximum basic rate of 58 cents for first class mechanics, 40 and 36 cents for helpers and 34 to 20 cents for laborers.

The $10,000,000 shipyard of the Merchant Shipbuilding Corporation at Bristol, Pennsylvania, has been offered for sale by the United States Shipping Board. Forty ships for the war program were built at the yard, which has twelve shipways for the building of twelve 400-foot steel steamships at one time and all the necessary equipment for turning out such an output at top speed. Not only will the machinery be sold, but all the buildings, materials and supplies.

## Repair Work

### BETHLEHEM SHIPBUILDING CORPORATION, LTD.

#### Union Plant

Hull repairs: Col. E. L. Drake. Miscellaneous repairs: S. C. T. Dodd, Athene, Orotava (also installing two loading ports), Acme, Dewey, Elizabeth, Tjileboet, Sonoma, Sylvan Arrow, Oleum, Hattie Luckenbach, Marama, Nichteroy, Oregon. Propeller: Mayfair, Johanna Smith (2), Enterprise. Fog bell: Charlie Watson. Cylinder for cargo pump: Los Angeles. Minor repairs: Frank G. Drum, Manukai, Wolverine, Richmond, State, Broad Arrow, F. S. Loop, Dochra, Standard Arrow, Dilworth, Chancellor, Paul H. Harwood, San Pedro. Engine repairs: Andrea F. Luckenbach. Repairs to combustion chamber: H. M. Storey, W. S. Rheem.

### LOS ANGELES SHIPBUILDING & DRY DOCK CORPORATION, SAN PEDRO

Miscellaneous repairs: Catherine C. Sudden, Harvard (emergency), Kennecott, K. I. Luckenbach (electrical). Minor machinery repairs: Willhilo, Coolcha, Stanwood, Phyllis, Trinidad, Willie A. Higgins (also hull), Pleiades, Cold Harbor. Semi-annual overhauling: Harvard. Cleaning, painting: Two 90-foot barges (also renewing sheathing), Shabonee (also boiler, machinery and minor repairs). Extensive changes and repairs to hull and equipment: Colima. Removing old and installing new Diesel engine: Vaquero. Painting, renewal of propeller wheel and minor repairs: Florence Olson. Use of shear legs for lifting yacht Westerly from deck and placing in water: Forest King. Minor hull repairs: Babindo. Painting, miscellaneous repairs: Pacific. Boiler, main engine and piping repairs: Colima. Docking and general repairs: Pacific.

### MOORE SHIPBUILDING COMPANY, OAKLAND

Engine repairs: Tjisdale, Delagoa Maru, Providencia, Princess, La Placentia (also docking, cleaning, painting), Golden State (also deck repairs). Drydocking, cleaning, painting, miscellaneous repairs: Jim Butler, West Lewark, Dilworth, Golden Shore, barge Edna May, tug Rolph, Brunswick, Santa Monica, Sierra, Humboldt, Paraiso, tug Yankee, Mukilteo, Port Angeles, tug A. H. Payson. Drydocking, cleaning, painting: tug Biddle, Coalinga. Drydocking, wheel work: Yerba Buena. Voyage repairs: Empire State. Drydocking, cleaning and repairs: tug Shawnee. Miscellaneous repairs: Dewey, Oriental.

### NAVY YARD, PUGET SOUND

Docking and miscellaneous repairs: New York, Challenge, Kennedy. Miscellaneous repairs: Texas, Laub, McLanahan, Stoddert, Reno, Farquhar, Thompson, Paul Hamilton, Woodbury, William Jones, S. P. Lee, Nicholas, Young. Docking and minor repairs: Coal barges 157, 173, 369, Water barge 23, Ammunition lighters 3, 4, Fuel oil barge 4. Miscellaneous repairs incidental to operation as district craft: Eagle 57, Sotoyomo, Mahopac, Tatnuck, Iroquois, Pawtucket (also docking). Care and preservation: Seattle, Charlotte, Missoula, S. C. 310, Oregon (also docking).

### TODD DRYDOCKS, INC. SEATTLE

Oil burner parts: Broad Arrow, Apus. Cleaning, painting, etc.: Kitsap II, West Jappa. Repairs account collision damage: Karonga, Chattanooga City. Docking, engine repairs: Westerly. Docking for survey: Fulton. Miscellaneous repairs: Katori Maru, Forest Friend, Forest Pride, Liebre (electric welding), Talthybius, Unalga, Keystone State, Silver State, Algonquin. Engine repairs: Derblay. Miscellaneous betterments: Bay State. Installing oil burning system: D. G. Scofield.

### THE WINSLOW MARINE RAILWAY & SHIPBUILDING COMPANY, INC., SEATTLE

Deck and engine repairs: Surveyor. Drydocking and repairs: John C. Potter. Drydocking and renewing planking: Vancouver. Drydocking and engine repairs: Griffdu. Drydocking: Griffco.

### YARROWS, LTD., VICTORIA, B. C.

Docking, cleaning, painting, miscellaneous repairs: Malaspina, Mystery, Quenitsa. Miscellaneous repairs: Mafalda (minor), Givenchy (after stranding). Docking, new propeller blades: Princess Alice.

# Deep-Sea Shipping

## Pool Progresses Slowly

It is becoming evident that the organization of a Pacific Coast shipping corporation, which was proposed by Chairman Lasker of the Shipping Board and Herbert Fleishhacker, San Francisco banker, must be at the best long drawn out. A committee representing ports of the Pacific Coast went to Washington early in February to ascertain on what terms the government would sell its combination vessels. It failed to obtain any figure, for, said Mr. Lasker, the board was in no position to fix an upset price until the President had delivered his message to Congress on government aid to private shipping and Congress had taken action on Mr. Harding's proposals. As soon as Congress formulated a policy, however, the board desired to sell its Oriental combination vessels. In the meantime, said Mr. Lasker, the committee might work to bring about "agreements in principle that would iron out the difference between competing ports and make the formation of such a company possible."

### Two Conditions

The combine may be said to depend, therefore, upon the government's policy toward merchant shipping and also upon practical unanimity of Pacific Coast cities. Speculation upon the probable nature of the first is profitless; as for the second, there are indications of stormy days ahead. Portland has not ceased its opposition to the plan, or perhaps the attitude of the Columbia River may be expressed by the statement that it has not relaxed its attitude of suspicion. H. B. Van Duzer, president of the Portland Chamber of Commerce, had several criticisms to make upon his return home from the preliminary conference held in San Francisco. He objected to the secrecy of the meeting; though it was quasi-public, reporters had practically no opportunity to obtain direct information regarding the progress of discussion. "This sort of thing," said Mr. Van Duzer, "seemed out of order where the consideration was to be ships owned by the general public, and the discussion was to be one of public interest." Moreover, said he, "the fact that the affair had been arranged by interests which were rivals of this port naturally made us suspect something." When such sentiments are expressed by Portland, which had regarded San Francisco as an ally against its natural enemy, Seattle, proof enough exists that "ironing out the difference" between the ports will be no child's play.

### Some Light Cast

Mr. Van Duzer cast some light upon hitherto obscure details of the plan. Long-term credits, low interest on unpaid portions of the purchase price, United States mail contracts, transportation of army and navy supplies and the placing of naval reserves on vessels, all of which were suggested as government aids, would mean some $400,000 a year to the corporation. The figure appears to be decidedly lower than one would expect from such an array. Mr. Van Duzer also said that the plan proposed that the combine take over tonnage from the government at 10 cents on the dollar; if by that he means 10 per cent of the cost of the vessels, then the government would receive an average of about $750,000 each for such combination vessels as the Golden State and Bay State. The cost of the 535's, in some instances, ran to $8,500,000, due to their being laid down as transports and converted to combination vessels, to the frequent and expensive changes that were made, and also to such frills as mural paintings, which, however pleasing they may be to the state for which a vessel is named, cannot be regarded as altogether necessary. In any event, although Mr. Lasker does not feel able at this time to fix an upset price, it does appear that some rumor regarding prices did reach the ears of the San Francisco conference.

### Mr. Fleishhacker Quoted

Nevertheless, Mr. Fleishhacker is reported to be doubtful of the possibility of operating American tonnage on the Pacific unless laws are changed. "Too many handicaps," he is quoted as having said, "are placed on American shipping today by American law to justify the investment of millions of dollars in shipping enterprise. If the Shipping Board were to turn the passenger ships under consideration over to us as a gift today, with obligation to operate, they would prove an unprofitable investment, owing to the difference in cost of operation here and abroad." The statement may be true, but it does not appear to be well-considered, and its essential accuracy may be questioned. The Atlantic Coast Shipbuilders' Association sponsors the statement that recent reductions have cut wages "to approximate equality with the British scale." That wages amount to only 6 or 12 per cent of the total cost of operation is true enough; on the other hand, capital charges are the greatest single item of expense, provided that tonnage has not been written down to nothing and operated on that basis. Even the Nippon Yusen Kaisha carries its vessels at an average valuation of $56 (yen 112) a gross ton. If an American company could not operate the 535's at a profit, even though the government should make a gift of the vessels, then the world-wide shipping depression must be to blame.

### A Stone Wall

Portland will insist that any other company or individual be permitted to purchase tonnage from the board on the same terms as those granted to the proposed corporation, said Mr. Van Duzer. Here he appears to meet a stone wall. Mr. Lasker, according to a statement issued by the board, "made it plain that there was nothing in the suggested plan that precluded any and all ports and all individuals purchasing any cargo ships desired, on the identical price and terms that any company, including the proposed one, could obtain." That statement appears to be broad enough; but emphasis must be placed on the words "cargo ships." In other words, the board evidently desires to sell all the combination vessels at once, although, to quote Mr. Lasker further, "if a higher bid for the passenger ships . . . was received, the higher bidder would, of course, obtain the ships; but he expressed the fear that in default of the formation of a syndicate no group would exist strong enough to buy the vessels.

If Portland and Los Angeles interests declined to enter the corporation, would they be permitted to buy a few combination vessels? If not, the board might offer cargo-carriers indefinitely without benefiting those cities in the least; for, apart from the natural desire of a port to have passenger lines plying from it, the combination vessel is the power in the Pacific today. In competition with such steamers as those of the Canadian Pacific, T. K. K., N. Y. K., Pacific Mail and Pacific Steamship, the ordinary small, slow freighter is at a tremendous disadvantage in commanding cargo, and it will continue to be at a disadvantage so long as the present depression continues.

### Take or Leave It

It appears, therefore, that if the Shipping Board is determined to sell its combination vessels to one large company, Portland would have to

# Privately Owned Floating Docks of the United States

[illegible]

| LOCATION | Dock Number | PROPRIETOR | Length Over all | Width of Entrance | Capacity (Tons) | Depth of Water Over Sill | Year Completed | Material of Construction | REMARKS |
|---|---|---|---|---|---|---|---|---|---|
| [illegible] | | | | | | | | | |
| Baltimore, Md. | -- | Bethlehem Shipbuilding Corp., Ltd. | [illegible] | 76'-0" | [illegible] | 30'-0" | 1911 | Wood | [illegible] |
| | - | Do. | [illegible]'-0" | [illegible] | [illegible] | 24'-0" | 1919 | Wood | |
| Do. | | [illegible] Shipbuilding & Dry Dock Co. | [illegible]'-0" | 80'-0" | 9,000 | [illegible]'-6" | 19[illegible] | " | |
| [illegible] | — | [illegible] Dry Dock & Machine Co. | [illegible]'-0" | [illegible]'-0" | 6,000 | [illegible]'-6" | 1919 | " | |
| [illegible] | . | [illegible] Shipbuilding Co. | [illegible]'-0" | 64'-6" | [illegible] | [illegible]'-0" | 1921 | Steel | |
| Galveston, Texas | -- | Galveston Dry Dock & Construction Co. | [illegible]'-0" | 84'-0" | 10,000 | [illegible]'-0" | 1919 | " | |
| Jacksonville, Fla. | [illegible] | Merrill-Stevens | 33[illegible]'-0" | 80'-[illegible] | 6,[illegible] | [illegible] | -- | Wood | 3 pontoons. Under construction. |
| Do. | — | Do. | [illegible]'-0" | 68'-0" | 4,500 | 20'-0" | 1906 | " | |
| Mobile, Ala. | 3 | Alabama Dry Dock & Shipbuilding Co. | 6[illegible]'-0" | 76'-0" | 10,000 | [illegible]'-0" | 1919 | " | |
| Do. | 4 | Do. | 31[illegible]'-0" | 63'-0" | 3,600 | 16'-0" | 1906 | " | |
| New Orleans, La. | 1 | New Orleans Dry Dock & S.B. Company, Inc. (Johnson Iron Works) | 384'-0" | 72'-0" | 5,000 | 21'-0" | 1908 | " | |
| Do. | 2 | Do. | 28[illegible]'-0" | 62'-0" | 2,[illegible]00 | 19'-0" | 1908 | " | |
| Do | 1 | Jahncke Dry Dock & Ship Repair Corp. | 521'-0" | 84'-0" | 10,000 | 26'-0" | 1919 | " | |
| Do. | 8 | Do. | 64[illegible]'-0" | 80'-[illegible]" | 6,000 | 25'-0 | 1920 | " | |
| Do. | - | Algiers Iron Works | [illegible]'-0" | 58'-0" | 2,200 | 2[illegible]'-0" | -- | Steel | [illegible] construction |
| New York (Ft. [illegible] St., Brooklyn) | [illegible] | [illegible] | 6[illegible]'-0" | 86'-0" | 9,000 | 29'-0" | 1920 | Wood | |
| Do. (Ft. [illegible] St., ") | 1 | [illegible] | 1[illegible]'-0" | 45'-0" | 1,500 | 12'-0" | 1908 | " | |
| Do. | 2 | Do. | 325'-0 | 72'-0" | 7,500 | 26'-0" | 1920 | " | |
| Do. ([illegible], Brooklyn) | 1 | [illegible] Dry Docks, Inc. | 42[illegible]'-0" | 86'-0" | 8,500 | 24'-0" | 1918 | " | |
| Do. ([illegible] Basin, ") | 1 | [illegible] Dry Dock & [illegible] | 25[illegible]'-0" | 60'-0" | 2,[illegible]00 | 18'-0" | 1901 | " | |
| Do. " | 2 | Do. | 3[illegible]'-0" | 6[illegible]'-0" | 6,[illegible]00 | 22'-0 | 1900 | " | |
| Do. " | 4 | | 4[illegible]'-0" | [illegible]'-0" | 10,[illegible] | 2[illegible]'-0" | 19[illegible]1 | " | |
| Do. ([illegible]) | 1 | [illegible] & [illegible] Fletcher [illegible] | [illegible] | [illegible] | 8,500 | [illegible]'-0" | 1920 | " | |
| [illegible] ([illegible], Brooklyn) | [illegible] | Liberty Dry Dock & Repair Co. | 200'-0" | [illegible]5'-0" | [illegible],000 | 20'-0" | 1918 | " | |
| Do. | [illegible] | Do. | [illegible] | 60'-0" | [illegible] | 1[illegible]'-0" | 1919 | " | |
| Do. ([illegible] New York, N.J.) | 5 | Lord Dry Dock Corp. | 2[illegible]'-0" | 62'-0" | 3,600 | 21'-0" | 1920 | " | |
| Do. | 6 | [illegible] | [illegible]'-0" | 86'-0" | 10,000 | 23'-0" | 1921 | " | |
| Do. (Ft. [illegible] St., Brooklyn) | 1 | Morse Dry Dock & Repair Co. | [illegible] | [illegible] | [illegible] | [illegible] | [illegible] | " | |
| Do. | 2 | Do. | 6[illegible]'-0" | 100'-[illegible] | 30,[illegible] | 28'-0" | 1918 | " | |
| Do. (Erie Basin, Brooklyn) | 3 | Robins Dry Dock & Repair Co. | 34[illegible]'-0" | 78'-0" | 8,500 | 24'-0" | 1909 | Steel & Wood | |
| [illegible] | 4 | | [illegible]'-0" | 92'-0" | [illegible] | 2[illegible]'-0" | 19[illegible]4 | Wood | |
| Do. | 5 | Do. | 34[illegible]'-0" | 78'-0" | 8,[illegible] | 2[illegible]'-0" | 19[illegible]6 | " | |
| Do. | 6 | Do. | 6[illegible] | 9[illegible] | 8,[illegible] | 24'-[illegible] | 1919 | " | |
| Do. ([illegible]) | 1 | [illegible] Iron Works | 380'-0" | 70'-4" | [illegible],000 | 2[illegible]'-0" | — | Steel | Will be completed in 19[illegible]. |
| Do. (Ft. 7th St., Brooklyn) | 3 | James Shewan & Sons | 278'-0" | 76'-6" | 3,[illegible]00 | 22'-0" | 1916 | Wood | |
| Do. | 4 | Do. | [illegible]40'-0" | 68'-0" | 2,800 | 20'-0" | 1914 | " | |
| Do. Do. | 6 | Do. | 42[illegible]'-0" | 72'-0" | 6,[illegible] | [illegible]'-0" | 1911 | " | |
| Do. Do. | 7 | Do. | 450'-0" | 92'-0" | 12,000 | 30'-0" | 1913 | Steel | |
| Do. Do. | 9 | Do. | 210'-0" | 58'-0" | 1,500 | 14'-0" | 1908 | Wood | |
| Do. Do. | 10 | Do. | 428'-0" | 80'-0" | 7,[illegible] | 28'-0" | 1917 | " | |
| Do. (Ft. [illegible] St., Brooklyn) | 3 | Tebo Yacht Basin Co | 2[illegible]'-0" | 65'-0" | 3,000 | 20'-0" | 1898 | " | |
| Do. (Ft. [illegible] East 7th St.) | 2 | James Tregarthen & Sons | [illegible]34'-0" | 73'-0" | [illegible] | 16'-0" | 1908 | " | |
| Do. Do. | 3 | Do. | 23[illegible]'-0" | 58'-0" | 2,000 | 18'-0" | 1911 | " | |
| Do. (Hoboken, N.J.) | 2 | Tietjen & Lang Dry Dock Co. | 234'-0" | 61'-0" | 1,[illegible] | 1[illegible]'-0" | 1890 | " | |
| Do. Do. | 4 | Do. | 4[illegible]'-0" | 80'-0" | 1[illegible],[illegible]00 | 22'-0" | 1900 | " | |
| Do. Do. | 9 | Do. | [illegible]'-0" | 80'-0" | 6,000 | 22'-0" | 1907 | " | |
| Do. (Edgewater, N.J.) | 1 | Union Dry Dock & Repair Co. | 225'-0" | 65'-4" | [illegible] | 18'-0" | 1880 | " | |
| Do. [illegible] | 6 | Do. | 148'-0" | 65'-6 | 2,000 | 18'-0" | -- | " | Will be completed in 19[illegible]. |
| Do. Do. | 1 & 5 combined | Do | — | 65'-8" | 3,500 | 18'-0" | — | -- | |
| Do. (Jersey City, N.J.) | 2 & 4 combined | Vulcan Iron Works | 336'-0" | 59'-0" | 2,400 | 18'-0" | 1919 | Steel | Twin docks, operated jointly |
| Do. (West New Brighton, S.I.) | 1 | Frank [illegible] | 209'-0" | 64'-0" | 2,000 | 17'-0" | 1901 | Wood | |
| Do. Do. | 1 | National Dry Dock & Repair Co. | 198'-0" | 68'-0" | 2,000 | 15'-0" | 1916 | " | |
| Do. (Kearney, N.J.) | -- | Federal Shipbuilding Co. | 640'-0" | 96'-0" | 8,800 | 22'-0" | 1921 | " | |
| Do. (Mariners Harbor) | 4 | Brewer Dry Dock | 610'-0" | 86'-0" | 8,800 | 22'-0" | -- | " | Not launched. (New) |
| Do. (Port Richmond, [illegible]) | 1 | Staten Island Shipbuilding Co. | 300'-9" | 69'-6" | [illegible] | 28'-6" | 1902 | " | |
| Do. (Mariners Harbor) | 4 | Do. | 221'-3" | 56'-4" | 1,700 | 22'-6" | 1901 | " | |
| Do. Do. | 4 | Do. | 656'-10" | 85'-9" | 10,000 | 22'-0" | 1920-21 | " | |
| Do. (Perth Amboy, N.J.) | 2 | Perth Amboy Dry Dock Co. | 24[illegible]'-4" | 62'-0" | 2,500 | 17'-0" | 1899 | " | |
| Do. Do. | 5 | Do. | 447'-0" | 88'-0" | 10,000 | 24'-0" | 1921 | | |
| Do. (Communipaw, N.J.) | -- | Boat Repairing Corp. | 280'-0" | 74'-0" | 3,000 | 20'-0" | 1920 | " | |
| Do. ([illegible], N.J.) | - | New York Dry Dock Corp. | 462'-0" | 85'-7" | 10,000 | 23'-0" | 1919 | " | |
| Do. (Morris Canal Basin Jersey City, N.J.) | [illegible] combined | Vulcan Iron Works | 336'-0" | 59'-0" | 2,400 | 18'-0" | -- | — | Twin docks. |
| Norfolk, Va. | — | Norfolk Shipbuilding & Dry Dock Co. | 310'-0" | 65'-0" | 6,000 | [illegible]'-0" | 1920 | Wood | 4-section, 24" electrically driven pumps, 62,400 gals. per minute. |
| Pensacola, Fla. | -- | Bruce Dry Dock Company | 3[illegible]'-0" | 78'-2" | [illegible],000 | 18'-0" | 1920 | " | |
| Philadelphia, Pa. | 3 | Philadelphia Ship Repair Co. | [illegible]'-0" | 84'-0" | [illegible],300 | 17'-0" | 1911 | " | |
| Quincy, Mass. | -- | Bethlehem Shipbuilding Corp. | 470'-0" | 90'-[illegible] | 11,[illegible]00 | 27'-6" | 1921 | " | Continuous steel side walls. |
| TOTAL 65 | | | | | | | | | |
| PACIFIC COAST: | | | | | | | | | |
| Long Beach, Calif. | -- | Long Beach Shipyard Co. | 380'-0" | 80'-0" | 3,500 | 18'-0" | 1911 | Wood | |
| Los Angeles, Calif. | — | Los Angeles Shipbuilding & Dry Dock Co. | 540'-0" | 88'-0" | 12,000 | 22'-0" | 1920 | " | 4 sections. |
| Portland, Oregon. | St. Johns | Commission of Public Docks | 468'-0" | 82'-0" | 10,000 | 25'-0" | 1904 | " | |
| Do. | -- | Do. | 692'-0" | 96'-4" | 18,000 | 27'-6" | 1920 | " | Electric pumps. |
| San Francisco, Cal. (Potrero) | 2 | Bethlehem Shipbuilding Corp. | 270'-0" | 64'-0" | 2,000 | 14'-0" | 1901 | " | " " |
| Do. (Alameda) | 3 | Do. | 301'-0" | 68'-0" | 3,800 | 16'-0" | 1891 | " | " " |
| Do. (Potrero) | 4 | Do. | 48[illegible]'-0" | 80'-0" | 6,500 | 18'-0" | 1916 | " | " " |
| Do. (Potrero) | 6 | Do. | 421'-6" | 90'-0" | 12,000 | 19'-0" | 1921 | " | " " |
| Do. (Oakland) | 4 | Moore Shipbuilding Company | 4[illegible]'-0" | 90'-0" | 12,000 | 30'-0" | 1921 | " | Four pontoons |
| Do. Do. | 5 | Do. | 4[illegible]'-0" | 90'-0" | 12,000 | 30'-0" | 1921 | " | " " |
| Do. Do. | 4 & 5 combined | Do. | 70[illegible]'-0" | 90'-0" | 21,000 | 30'-0" | -- | -- | Seven pontoons |
| Seattle, Wash. | 2 | Todd Dry Docks, Inc. | 200'-0" | 66'-0" | 3,000 | 19'-0" | 1904 | Wood | |
| Do. | 3 | Do. | 448'-0" | 88'-0" | 12,000 | 24'-0" | 1912 | " | Steel tank, 75-ton shears |
| Do. | 5 | Do. | 42[illegible]'-0" | 89'-0" | 12,000 | 26'-0" | 1917 | " | |
| Do. | -- | J.F. [illegible] Dry Dock Co. | 340'-0" | 66'-0" | 4,000 | 21'-6" | 1918 | " | |
| TOTAL 14 | | | | | | | | | |
| GREAT LAKES: | | | | | | | | | |
| Manitowoc, Wis. | [illegible] | Manitowoc Shipbuilding Co. | 360'-0" | 70'-0" | 4,[illegible] | 12'-6" to 14' | 1913 | Steel | Electric pumps. |
| Port Huron, Mich. | — | Wolverine Dry Dock | 249'-6" | 40'-6" | 2,400 | 11'-[illegible] | — | Wood | [illegible] converted 1920-21 |
| Rouge River, Mich. | 1 | Great Lakes Engineering Co. | 6[illegible]'-0" | 96'-0" | 8,000 | 12'-0" | 1906 | Steel | |
| Sturgeon Bay, Wis. | — | Sturgeon Bay Shipbuilding Co. | 200'-0" | 48'-0" | — | 12'-0" | — | Wood | |
| TOTAL 4 | | | | | | | | | |

## PRIVATELY OWNED GRAVING DOCKS, FLOATING DOCKS, AND MARINE RAILWAYS (IN OPERATION AND UNDER CONSTRUCTION) IN THE UNITED STATES.

(INCLUDES ALL PRIVATELY OWNED GRAVING DOCKS IN THE U.S. AND FLOATING DOCKS AND MARINE RAILWAYS OF 1800 TONS CAPACITY OR OVER).

(Sheet 1)
( of 3 )

GRAVING DOCKS

| LOCATION | Name or Number | PROPRIETOR | Length Over all | Length On floor | Width at Entrance |  | Depth Over Sill at High Water | Height of Sill Above Floor | Year completed | Material of Construction | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  | Top | Bottom |  |  |  |  |  |
| ATLANTIC AND GULF COAST: |  |  |  |  |  |  |  |  |  |  |  |
| Baltimore, Md. | Lower Dock | Bethlehem S.B. Corp., Ltd., | 469'-0" | 406'-0" | 80'-0" | 48'-0" | 22'-0" | 3'-0" | 1862 | Wood |  |
| Do. | Upper Dock | Do. | 614'-0" | 576'-0" | 80'-0" | 60'-0" | 25'-0" | 5'-6" | 1901 | " |  |
| Boston, Mass. | 1 | Simpson Patent Dry Dock Co. | 455'-0" | 450'-0" | 65'-0" | 65'-0" | 17'-6" | 5'-0" | — | " | Rebuilt 1914-1921 |
| Do. | 2 | Do. | 255'-0" | 250'-0" | 45'-0" | 45'-0" | 17'-6" | 3'-0" | 1854 | " |  |
| New York (Brooklyn) | 1 | Robins Dry Dock & Repair Co. | 510'-0" | 463'-0" | 98'-0" | 46'-0" | 26'-0" | Level with floor | 1865 | " |  |
| Do. | 2 | Do. | 612'-0" | 580'-0" | 85'-0" | 45'-0" | 30'-0" | Do. | 1868 | " |  |
| Newport News, Va. | 1 | Newport News S.B. & D.D. Co. | 592'-8" | 542'-7" | 92'-4½" | 49'-8" | 24'-8" | 1'-10" | 1889 | " | Concrete Entrance. Height of keel blocks above floor, 4'-0". |
| Do. | 2 | Do. | 804'-0" | 787'-4" | 102'-8" | 84'-4" | 30'-2" | 4'-4" | 1901 | Wood and granite | Height of keel blocks above floor 5'-0". |
| Do. | 3 | Do. | 536'-4" | 509'-0" | 99'-4" | 79'-0" | 24'-0" | 5'-4½" | 1908 | Wood and concrete | Height of keel blocks above floor 4'-0" |
| Philadelhpia, Pa. | C.D. D. | William Cramp & Son, | 450'-6" | 422'-4" | 69'-1" | 48'-0" | 20'-4" | 3'-0" | — | Oak and cement |  |
| Wilmington, Del. | 1 | Bethlehem S.B.Corp.(Harlan Plant) | 352'-0" | 343'-0" | 69'-6" | 41'-4" | 12'-0" | 5'-4" | — | Wood | Rebuilt 1902. 50-ton shears. |
| TOTAL 11 |  |  |  |  |  |  |  |  |  |  |  |
| PACIFIC COAST: |  |  |  |  |  |  |  |  |  |  |  |
| San Francisco, Calif., (Hunters Point) | 2 | Bethlehem S.B.Corp.(Union Plant). | 750'-0" | 714'-0" | 103'-6" | 86'-0" | 29'-0" | 2'-0" | 1901 | Concrete | Electric pumps. |
| Do. Do. | 3 | Do. | 1020'-0" | 1000'-0" | 153'-0" | 110'-0" | 40'-0" | 2'-0" | 1919 | " | " " |
| TOTAL 2 |  |  |  |  |  |  |  |  |  |  |  |
| GREAT LAKES: |  |  |  |  |  |  |  |  |  |  |  |
| Ashtabula, Ohio. | 1 | Great Lakes Engineering Co. | 650'-0" | 627'-0" | 70'-0" | 72'-0" | 16'-0" | 5'-0" | 1911 | Concrete |  |
| Bay City, Mich. | -- | James Davidson | 435'-0" | 400'-0" | 100'-0" | 60'-0" | 14'-6" | 7'-0" | 1901 | Wood and Concrete |  |
| Buffalo, N.Y. | 1 | Buffalo Dry Dock Co. | 470'-0" | 447'-0" | 61'-10" | 58'-8" | 16'-0" | 1'-6" | 1899 | Wood |  |
| Do. | 2 | Do. | 630'-0" | 600'-0" | 81'-2" | 79'-4½" | 15'-0" | 5'-0" | 1910 | " |  |
| Do. | 3 | Do. | 401'-0" | 372'-0" | 53'-0" | 49'-4" | 14'-6" | 5'-0" | 1913 | " |  |
| Chicago, Ill. | 1 | Chicago Shipbuilding Co. | 564'-0" | 584'-0" | 100'-0" | 80'-0" | 16'-0" | 4'-6" | 1891 | " |  |
| Do. | 2 | Do. | 717'-0" | 694'-0" | 103'-0" | 89'-0" | 17'-0" | 5'-0" | 1915 | Concrete |  |
| Cleveland, O. | 1 | American Shipbuilding Co. | 547'-0" | 532'-0" | 65'-0" | 59'-1½" | 12'-8" | 2'-5" | 1869 | Wood |  |
| Do. | 2 | Do. | 450'-0" | 432'-0" | 48'-0" | 48'-0" | 16'-0" | 3'-0" | 1887 | " |  |
| Detroit, Mich. | — | Detroit Shipbuilding Co. | 367'-7" | 341'-0" | 74'-0" | 52'-6" | 16'-6" | 4'-6" | 1892 | Wood and Concrete |  |
| Lorain, O. | 1 | American Shipbuilding Co. | 566'-0" | 534'-0" | 66'-0" | 60'-0" | 14'-6" | 4'-6" | 1899 | Iron and Steel |  |
| Do. | 2 | Do. | 737'-0" | 717'-0" | 60'-0" | 74'-0" | 14'-3" | 3'-0" | 1907 | Wood |  |
| Manitowoc, Wis. | 1 | Manitowoc Shipbuilding Corp. | 338'-6" | 300'-0" | 45'-2" | 38'-5" | 14'-0" | 3'-4" | 1902 | " | Electric Pumps. |
| Milwaukee, Wis. | 1 | Milwaukee Dry Dock Co. | 465'-6" | 450'-0" | 61'-0" | 56'-0" | 14'-6" | 3'-0" | 1903. | " |  |

choose between two courses—of entering the combine or of finding itself isolated. Would it necessarily suffer if it entered the combine? Chairman Lasker deprecated "ruinous competition" between ports and companies and urged the organization of "a popularly-owned company, uniting all the ports of the Pacific Coast, thus cutting down overheads, which might make it possible for some ports to operate ships of certain types, the trade for which otherwise could not be developed." But no corporation, however organized and however owned, would employ its vessels in an unprofitable trade or in a trade that offered less return than did another; in other words, tonnage would be concentrated where the greater business offered. Accordingly, Portland's fear of Seattle and San Francisco is natural enough; and the Columbia River city is not reassured by the suggestion of William Piggott of Seattle that two syndicates should be formed, one for California and the other for the Northwest, the Columbia River being included in the latter. This suggestion, it may be added, strikes hard at the original Lasker-Fleishhacker plan of one large corporation. If it were adopted it would entail nothing more than the supplanting of the Pacific Mail and Pacific Steamship with new companies. The question as to the necessity, or even desirability, of that naturally arises.

## Shipping Board Sale

March 14 will hold a great deal of interest for the entire world of shipping, for on that day the Shipping Board will open bids for more than 1400 vessels, practically the entire fleet, with the exception of wooden hulls, being included. Few persons would expect the board to receive many bids on that day, and few vessels are likely to be sold at this time; but the opening tenders well may indicate what prospects there are of disposing of the fleet within the next few years and at what prices. Unless the President's recommendations regarding government aid have been made to Congress, however, and some intimation received as to the attitude of the House and Senate, shipowners are likely to be chary of making any firm offers immediately. But March 14 is merely the opening gun of the campaign, for, says the Shipping Board's announcement, "all offers received before March 14, 1922, will be considered; and no award will be made before that date. Negotiations may be continued thereafter; and all offers received prior to final award on any vessel will be considered."

More detailed information regarding vessels offered will be found in a Shipping Board advertisement on advertising pages 24 and 25, this issue.

### The Dollar Purchase

While this enormous fleet is being offered, Captain Robert Dollar has created more than a little stir by purchasing the four 10,000 deadweight ton freighters, Cathay, Oriental, Mandarin and Celestial, built for the Shipping Board by the Kiangnan yard, Shanghai. In this purchase Captain Dollar, who is generally regarded as the shrewdest of all American shipowners, has paid a high compliment to the Chinese builder. Others join him in praising the vessels. They are second to none in quality of workmanship, partly because they were not built under stress of war but also because of the truly immense amount of hand labor that went into them. Captain Dollar knew full well what the vessels were, because his company acted as agent of the Kiangnan yard in its dealings with the government and in delivering the vessels. Three have been delivered, the Cathay having been turned over to the board by the Dollar Company February 1 and almost immediately turned back to the Dollar interests; one, the Oriental, cracked a cylinder on her voyage to the United States and is at the Moore yard, Oakland, for repairs. She, therefore, and not the Cathay, will be the last of all cargo vessels to be delivered to the board. The four will remain under the United States flag.

Although the Shipping Board has not disclosed the price, report has it that Captain Dollar paid $32 a deadweight ton. When the quality of the vessels is considered, there is no doubt that he got a real bargain.

## The "Pioneer Purchasers"

Apparently the Shipping Board has decided to permit "pioneer purchasers" of government tonnage, who have defaulted on their payments, to gain title to vessels by paying the difference between their installments to date and present market values, or, in other words, to acquire their tonnage at going prices. The word "apparently" is employed because the Shipping Board's announcement is, to say the least, obscure. The gist of it is contained in the following: "It was preferable, therefore, that the pioneer keep the ship, and acquire additional ships at a present market value, if by so doing the government received, in addition to what was paid in cash by the pioneer, an equivalent to the present market value of the ship. . . ." This solution, the board believes, will have the following results:

"(1) Compliance with the mandate of Congress expressed in the Merchant Marine Act, 1920, to place ships owned by the government into private hands.

"(2) Preserve in their operating integrity and efficiency approximately seventy shipping concerns now actively engaged in commerce from all the seaboards of the United States with a preservation of their organization and service.

"(3) Additional tonnage in the hands of these operators for a further expansion of ships under the American flag by private operation."

The board's decision, arrived at after hearings that began in November, will be welcomed by all concerned. Had the board insisted upon its pound of flesh more than one company would have been forced into bankruptcy, and the government would have had on its hands vessels that were worth no more than present market prices.

## The Subsidy Plan

The assistance thus given is substantial and immediate. Not so much can be said of the Shipping Board's government-aid program, submitted to President Harding January 24. If various rumors are true, operators will feel a keen disappointment. Especially is the Shipping Board's proposal to limit profits of operators open to the suspicion of impracticability, for, as a little consideration will demonstrate, it might place a premium on incompetence; it would force companies to turn their books over to a Shipping Board auditor, in order that the government might determine what actual profits were; and in the end it probably would result in companies being compelled to operate their vessels and expend money at the dictation of the board. Such are some of the inevitable consequences flowing from such a scheme.

### Some Other Schemes

Indirect subsidies are not open to these criticisms. Extension of the coastwise laws to the Philippines and turning over transport business to private companies would be of material assistance in the Pacific. No great praise can be bestowed upon the proposed enforcement of Section 28, Merchant Marine Act, which would deny import and export rail rates to goods moving overseas in foreign bottoms. Regardless of the justice of that section, regardless of the possibility that it may result in retaliation by other nations, the fact is that the old transcontinental-Pacific route has been destroyed by the opening of the Panama Canal, and that Section 28 therefore is impotent, even as a threat. It would be interesting to know whether those who urge the enforcement of Section 28 have taken pains to ascertain what tonnage is moving overland to and from Pacific ports.

### Two Vessels to Pacific Mail

Extension of the coastwise laws to the Philippines, which apparently was postponed indefinitely by the withdrawal of three combination vessels from the Pacific Mail as well as by General Wood's opposition, has been made much more probable by the action of the board in reassigning two of the vessels to the Pacific Mail. They will be employed, however, in a San Francisco-Honolulu-Manila service, instead of in the East Indian trade also. With these vessels again plying to Manila a foundation is again laid for an American service that could be described as "adequate" under the Merchant Marine Act. But General Wood's opposition remains to be overcome.

## General Steamship's Action

There is a great deal of significance in the announcement of the General Steamship Corporation that it has requested the Shipping Board to cancel its operating agreement covering vessels in the Pacific Coast-Australasian trade, and that the General Steamship Corporation has assumed the Pacific Coast agency of the Trans-Atlantic Steamship Company, Gothenburg, Sweden, which will maintain sailings from Europe to the Pacific Coast, thence to Australia and thence to Europe. Although the Shipping Board's service has been placed in the competent hands of Swayne & Hoyt and therefore will be continued without interruption, the entrance of the new line into the trade increases foreign-flag competition, and the fact that the General Steamship Corporation preferred to serve as agent of the newcomer must give Americans food for considerable thought.

### A Trilateral Route

It is quite possible that the Trans-Atlantic Company was able to make the General Steamship Corporation a more alluring offer than could the Shipping Board under MO4. But one does not need that hypothesis to explain why the Shipping Board's Australasian service has suffered during the last six months, and why foreign lines have entered the trade in increasing numbers. The fact is that northbound cargo from Australia has been at a premium, while southbound shipments have held up fairly well. Foreign lines, being privately owned and subject to no supervision, have hit upon the scheme of taking advantage of the movement south in order to get their tonnage to Australia, where heavy shipments of wool and wheat continue to offer for the United Kingdom. The first leg of the world-circling voyage, that from Europe to the Pacific Coast, has been made possible by shipments of Welsh coal. These last-named cargoes have been accepted at $3, and lumber to Australia at $12 to $14. The rates are scarcely remunerative, but, if not actually returning a loss, serve to open up the Australian-United Kingdom trade to foreign vessels, with the result that the whole series of voyages does yield a respectable return.

### Some Thinking Needed

For American operators longer to shut their eyes to the necessity of thinking in terms of trilateral or quadrilateral voyages will be suicidal. There are many instances of trade routes that command large tonnages in one direction and nothing or almost nothing in the other. The foreign lines, thinking in terms of world-trade, adapt themselves to circumstances; American operators, or at least the Shipping Board, fix their eyes on their home ports; their whole idea is of sailings to and from the United States, and, except for the feeder services of the Shipping Board, there are almost no American vessels plying between foreign countries. But there are other factors, among which may be mentioned the curious assumption of the American people that shipping must be considered always as an adjunct to foreign trade. Doubtless the two are related closely and are mutually self-supporting, but in the long run shipping will have to stand upon its own feet, for the exporter who demands a new trade route today is the first to give his cargo to a rate-cutting foreign vessel tomorrow. Another factor, probably most important of all, is the naive belief of the United States that it can retain foreign trade while raising tariff walls against every country in the world.

## More Wage Reductions

Following the lead of the Shipping Board, the American Steamship Owners' Association and the Pacific American Steamship Association, the Shipowners' Association of the Pacific Coast, representing owners of steam schooners and sailing vessels, has reduced wages, effective February 15. For officers of steamers reductions range from $5 to $15; for seamen, firemen, etc., from $5 to $12.50; and for crews of sailing vessels from $5 to $10. The new and old scales follow in full:

### WAGE SCALES, SHIPOWNERS' ASSOCIATION OF THE PACIFIC COAST

**Steam Vessels, Class D**

| | Feb. 15, 1922 | Jul. 15, 1921 |
|---|---|---|
| First mates | $140 | $155.00 |
| Second | 120 | 135.00 |
| Third | 105 | 110.00 |
| Chief engineers | 190 | 205.00 |
| First | 140 | 155.00 |
| Second | 120 | 135.00 |
| Third | 105 | 110.00 |
| Chief radio operators | 100 | 100.00 |
| Assistants | 80 | 75.00 |
| Able seamen | 65 | 77.50 |
| Ordinary seamen | 45 | 55.00 |
| Boys | 30 | 30.00 |
| Oilers | 65 | 77.50 |
| Firemen | 65 | 77.50 |
| Chief stewards | 95 | 100.00 |
| Chief cooks | 95 | 100.00 |
| Second and bakers | 75 | 80.00 |
| Messboys | 50 | 60.00 |
| Pantrymen | 50 | 60.00 |
| Cabinmen | 50 | 60.00 |
| Galleymen | 50 | 60.00 |
| Waiters | 50 | 60.00 |

(Wireless scale, second column, effective November 2, 1921.)

**Sailing Vessels**

| | Feb. 15, 1922 | Nov. 2, 1921 |
|---|---|---|
| Masters | $165 | $165.00 |
| First mates | 100 | 110.00 |
| Second | 75 | 80.00 |
| Able seamen— | | |
| (A) Coastwise on Pacific Coast U. S. and to Hawaii | 50 | 60.00 |
| (B) Other voyages | 40 | 50.00 |
| Ordinary seamen— | | |
| Subdivision A | 35 | 40.00 |
| Subdivision B | 30 | 35.00 |
| Deck boys | 25 | 25.00 |
| Donkeymen | 55 | 65.00 |
| Carpenters | 55 | 65.00 |
| Donkeymen and carpenters (comb'n) | 65 | 75.00 |
| Cooks | 90 | 90.00 |
| Galley boys | 35 | 40.00 |

These scales, taken in conjunction with those of the Shipping Board, American Steamship Owners' Assocation and Pacific American Steamship Association, which were published in full in the February number of Pacific Marine Review, give all reductions announced up to February 10.

# Comparative Wage Scales, Pacific American Steamship Association

## REDUCTION OF FEBRUARY 1 NOT CONSIDERED

| | CLASSIFICATION—1919-1920: | | CLASSIFICATION—1921 | |
|---|---|---|---|---|
| | Single Screw | Twin Screw | Single Screw | Twin Screw |
| A | Over 20,001 | Over 15,001 | Over 20,001 | Over 15,000 |
| B | 12,001 to 20,000 | 9,001 to 15,000 | 12,001 to 20,000 | 9,001 to 15,000 |
| C | 7,501 to 12,000 | 5,501 to 9,000 | 7,501 to 12,000 | 5,501 to 9,000 |
| D | 5,001 to 7,500 | 3,501 to 5,500 | 5,001 to 7,500 | 3,501 to 5,500 |
| E | Below 5,001 | Below 3,501 | 3,501 to 5,000 | 2,501 to 3,500 |
| F | | | Below 3,501 | Below 2,501 |

## LICENSED ENGINEERS

| | CHIEF ENGINEER | | | | | |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | F |
| 1921 | $330.00 | $295.00 | $285.00 | $270.00 | $260.00 | $205.00 |
| 1920 | 387.50 | 346.25 | 332.50 | 318.75 | 305.00 | ...... |
| 1919 | 387.50 | 346.25 | 332.50 | 318.75 | 305.00 | ...... |
| 1918 | ...... | ...... | 250.00 | 225.00 | 200.00 | ...... |
| 1917 | ...... | ...... | 250.00 | 225.00 | 200.00 | ...... |
| 1916 | ...... | ...... | 185.00 | 180.00 | 165.00 | ...... |
| 1915 | ...... | ...... | 175.00 | 160.00 | ...... | ...... |
| 1914 | ...... | ...... | 175.00 | 160.00 | ...... | ...... |
| 1913 | ...... | ...... | 175.00 | 150.00 | ...... | ...... |
| 1912 | ...... | ...... | 175.00 | ...... | ...... | ...... |

| | FIRST ENGINEER | | | | | |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | F |
| 1921 | $205.00 | $200.00 | $195.00 | $190.00 | $185.00 | $155.00 |
| 1920 | 241,25 | 235.00 | 228.75 | 222.50 | 216.25 | ...... |
| 1919 | 241,25 | 235.00 | 228.75 | 222.50 | 216.25 | ...... |
| 1918 | ...... | ...... | 175.00 | 165.00 | 155.00 | ...... |
| 1917 | ...... | ...... | 175.00 | 165.00 | 155.00 | ...... |
| 1916 | ...... | ...... | 130.00 | 115.00 | 115.00 | ...... |
| 1915 | ...... | ...... | 125.00 | 100.00 | ...... | ...... |
| 1914 | ...... | ...... | 125.00 | 100.00 | ...... | ...... |
| 1913 | ...... | ...... | 125.00 | 100.00 | ...... | ...... |
| 1912 | ...... | ...... | ...... | 100.00 | ...... | ...... |

| | SECOND ENGINEER | | | | | |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | F |
| 1921 | $180.00 | $175.00 | $170.00 | $165.00 | $160.00 | $135.00 |
| 1920 | 212.50 | 206.25 | 200.00 | 193.75 | 187.50 | ...... |
| 1919 | 212.50 | 206.25 | 200.00 | 193.75 | 187.50 | ...... |
| 1918 | ...... | ...... | 150.00 | 140.00 | 135.00 | ...... |
| 1917 | ...... | ...... | 150.00 | 140.00 | 135.00 | ...... |
| 1916 | ...... | ...... | 120.00 | 105.00 | 105.00 | ...... |
| 1915 | ...... | ...... | 105.00 | 90.00 | ...... | ...... |
| 1914 | ...... | ...... | 105.00 | 90.00 | ...... | ...... |
| 1913 | ...... | ...... | 105.00 | 90.00 | ...... | ...... |
| 1912 | ...... | ...... | ...... | 85.00 | ...... | ...... |

| | THIRD ENGINEER | | | | | |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | F |
| 1921 | $160.00 | $155.00 | $150.00 | $145.00 | $140.00 | $110.00 |
| 1920 | 188.75 | 182.50 | 176.25 | 170.00 | 163.75 | ...... |
| 1919 | 188.75 | 182.50 | 176.25 | 170.00 | 163.75 | ...... |
| 1918 | ...... | ...... | 130.00 | 125.00 | 120.00 | ...... |
| 1917 | ...... | ...... | 130.00 | 125.00 | 120.00 | ...... |
| 1916 | ...... | ...... | 110.00 | 100.00 | 95.00 | ...... |
| 1915 | ...... | ...... | 85.00 | 80.00 | ...... | ...... |
| 1914 | ...... | ...... | 85.00 | 80.00 | ...... | ...... |
| 1913 | ...... | ...... | 85.00 | 80.00 | ...... | ...... |
| 1912 | ...... | ...... | ...... | 70.00 | ...... | ...... |

## LICENSED MATES

| | FIRST OFFICER | | | | | |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | F |
| 1921 | $205.00 | $200.00 | $195.00 | $190.00 | $185.00 | $155.00 |
| 1920 | 241.25 | 235.00 | 228.75 | 222.50 | 216.25 | ...... |
| 1919 | 241.25 | 235.00 | 228.75 | 222.50 | 216.25 | ...... |
| 1918 | ...... | ...... | 165.00 | 160.00 | 155.00 | ...... |
| 1917 | ...... | ...... | 165.00 | 160.00 | 155.00 | ...... |
| 1916 | ...... | ...... | 135.00 | 130.00 | 115.00 | ...... |
| 1915 | ...... | ...... | 135.00 | 110.00 | ...... | ...... |
| 1914 | ...... | ...... | 135.00 | 110.00 | ...... | ...... |
| 1913 | ...... | ...... | 135.00 | 110.00 | ...... | ...... |
| 1912 | ...... | ...... | ...... | 100.00 | ...... | ...... |

| | SECOND OFFICER | | | | | |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | F |
| 1921 | $180.00 | $175.00 | $170.00 | $165.00 | $160.00 | $135.00 |
| 1920 | 212.50 | 206.25 | 200.00 | 193.75 | 187.50 | ...... |
| 1919 | 212.50 | 206.25 | 200.00 | 193.75 | 187.50 | ...... |
| 1918 | ...... | ...... | 140.00 | 135.00 | 132.50 | ...... |
| 1917 | ...... | ...... | 140.00 | 135.00 | 132.50 | ...... |
| 1916 | ...... | ...... | 110.00 | 105.00 | 95.00 | ...... |
| 1915 | ...... | ...... | 105.00 | 85.00 | ...... | ...... |
| 1914 | ...... | ...... | 85.00 | 85.00 | ...... | ...... |
| 1913 | ...... | ...... | 85.00 | 85.00 | ...... | ...... |
| 1912 | ...... | ...... | ...... | 85.00 | ...... | ...... |

| | THIRD OFFICER | | | | | |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | F |
| 1921 | $160.00 | $155.00 | $150.00 | $145.00 | $140.00 | $110.00 |
| 1920 | 188.75 | 182.50 | 176.25 | 170.00 | 163.75 | ...... |
| 1919 | 188.75 | 182.50 | 176.25 | 170.00 | 163.75 | ...... |
| 1918 | ...... | ...... | 125.00 | 122.50 | 120.00 | ...... |
| 1917 | ...... | ...... | 125.00 | 122.50 | 120.00 | ...... |
| 1916 | ...... | ...... | 100.00 | 95.00 | 85.00 | ...... |
| 1915 | ...... | ...... | 85.00 | 75.00 | ...... | ...... |
| 1914 | ...... | ...... | 75.00 | 75.00 | ...... | ...... |
| 1913 | ...... | ...... | 75.00 | 75.00 | ...... | ...... |
| 1912 | ...... | ...... | ...... | 70.00 | ...... | ...... |

## SAILORS, STEWARDS AND WIRELESS DEPARTMENTS

| | Carpente | Carpenter's Mate | Boatswain | Bos'n's Mate | Quartermaster | Able Seaman | Ord. Seaman | Boy |
|---|---|---|---|---|---|---|---|---|
| 1921 | $ 85.00 | $80.00 | $80.00 | $77.50 | $75.00 | $72.50 | $52.50 | $30.00 |
| 1920 | 100.00 | 95.00 | 95.00 | 90.00 | 87.50 | 85.00 | 65.00 | 40.00 |
| 1919 | 100.00 | 95.00 | 95.00 | 90.00 | 87.50 | 85.00 | 65.00 | 40.00 |
| 1918 | ...... | ..... | 80.00 | ..... | ..... | 75.00 | ..... | ..... |
| 1917 | ...... | ..... | 65.00 | ..... | ..... | 60.00 | ..... | ..... |
| 1916 | ...... | ..... | 60.00 | ..... | ..... | 55.00 | ..... | ..... |
| 1915 | ...... | ..... | 55.00 | ..... | ..... | 50.00 | ..... | ..... |
| 1914 | ...... | ..... | 55.00 | ..... | ..... | 50.00 | ..... | ..... |
| 1913 | ...... | ..... | 55.00 | ..... | ..... | 50.00 | ..... | ..... |
| 1912 | ...... | ..... | ..... | ..... | ..... | 50.00 | ..... | ..... |

| | Chief Steward | Chief Cook | 2nd Cook & Baker | Third Cook | Cook's Mate | Messman | Messboy | Apprentice |
|---|---|---|---|---|---|---|---|---|
| 1921 | $120.00 | $100.00 | $80.00 | $65.00 | $65.00 | $70.00 | $60.00 | $30.00 |

(Other years blank.)

| | Wireless Operator | Assistant |
|---|---|---|
| 1921 | $105.00 | $85.00 |

| | Deck Engineer | Pumpman | Donkeyman | Storekeeper | Oiler | Fireman | Coal Passer & Wiper | Water Tender |
|---|---|---|---|---|---|---|---|---|
| 1921 | $ 85.00 | $85.00 | $80.00 | $80.00 | $80.00 | $75.00 | $65.00 | $80.00 |
| 1920 | 100.00 | 100.00 | 95.00 | 95.00 | 95.00 | 90.00 | 75.00 | 95.00 |
| 1919 | 100.00 | 100.00 | 95.00 | 95.00 | 95.00 | 90.00 | 75.00 | 95.00 |
| 1918 | 85.00 | 80.00 | ..... | ..... | 75.00 | 75.00 | 75.00 | ..... |
| 1917 | 70.00 | 65.00 | ..... | ..... | 60.00 | 60.00 | 60.00 | ..... |
| 1916 | 65.00 | 60.00 | ..... | ..... | 55.00 | 55.00 | 55.00 | ..... |
| 1915 | 65.00 | 55.00 | ..... | ..... | 55.00 | 55.00 | 55.00 | ..... |
| 1914 | 65.00 | 55.00 | ..... | ..... | 55.00 | 55.00 | 55.00 | ..... |
| 1913 | 65.00 | 55.00 | ..... | ..... | 55.00 | 55.00 | 55.00 | ..... |
| 1912 | ..... | 55.00 | ..... | ..... | 55.00 | 55.00 | 55.00 | ..... |

## Has His Irish Up

Commissioner O'Connor of the Shipping Board has issued a tart reply to the statement of Andrew Furuseth, discussed in these columns last month, to the effect that the percentage of United States citizens in crews of American vessels had decreased from 58 per cent in 1921 to 15 or 18 per cent in 1922. Mr. O'Connor's statement follows in full:

On January 9, 1922, Mr. Andrew Furuseth, president of the International Seamen's Union, issued a statement at Chicago, Illinois, which was published at length in the Chicago News of that date and also published quite broadly over the United States, to the effect that a year ago 58 per cent of the crews employed on American vessels were citizens of the United States, but that now only 15 to 18 per cent of such crews are American citizens. He also made a statement in a letter to Mr. A. J. Frey, vice-president in charge of operation, on January 4, 1922, to the effect that the Americans are leaving the sea.

### Statistics Are Cited

The annual report of the commissioner of navigation of the Department of Commerce for the fiscal year ending June 30, 1921, shows on page 21 the nationality of crews signed before the shipping commissioners for the fiscal years from 1914 to 1921, inclusive. The percentage of Americans shipped during each of those years was the following:

| 1914 | 1915 | 1916 | 1917 |
|---|---|---|---|
| 47.4 | 43.5 | 43.2 | 42.9 |
| 1918 | 1919 | 1920 | 1921 |
| 41.9 | 47.6 | 50.5 | 48.3 |

During the last six months of 1921, that is, from July 1 to December 31, 54.6 per cent of the crews shipped on American vessels before the United States shipping commissioners were American citizens. This is the highest percentage of Americans on American ships for a great many years.

The figures covering the last six months of 1921 are taken from the records of the United States shipping commissioners at fifteen American ports, namely: Boston, Massachusetts; New York, New York; Philadelphia, Pennsylvania; Baltimore, Maryland; Norfolk, Virginia; Newport News, Virginia; Savannah, Georgia; Jacksonville, Florida; New Orleans, Louisiana; Tampa, Florida; Galveston, Texas; Mobile, Alabama; San Francisco, California; Portland, Oregon; Seattle, Washington. This covers all the ports from which men are shipped in substantial numbers.

The percentage of American citizens employed on Shipping Board vessels is very much higher than on privately-owned ships. For example, the records of the United States shipping commissioner's office at New Orleans show that 52 per cent of all the men shipped before the commissioners were American citizens. The report further states: "The figures . . . given are those given me by the United States shipping commissioner and he informs that the United Fruit Company and the New York & Cuban Mail Steamship Line are responsible to a great extent for the large percentage of aliens shipped."

The following shows the percentage of Americans placed by the Sea Service Bureau for the periods mentioned: During the fiscal year ending June 30, 1920, 65.7 per cent; during the fiscal year ending June 30, 1921, 68.8 per cent; last six months of 1921, namely, July to December, inclusive, 93 per cent.

These two records, first that of the United States shipping commissioners covering the fifteen principal American ports, and second, the records of the Sea Service Bureau covering the same ports, seem to answer conclusively Mr. Furuseth's statement to the effect that the Americans are leaving the sea and that the percentage has dropped within the past year from 58 per cent to between 15 and 18 per cent Americans. Mr. Furuseth possibly refers to the percentage of Americans in the union of which he is the president, in which case he is undoubtedly correct, but speaking generally, the facts as above set forth show the opposite to Mr. Furuseth's statement to be the case, and this increase in the percentage of Americans has been due solely to the efforts of the Shipping Board.

## Steamship Owners Elect

At the annual meeting of the American Steamship Owners' Association held in New York February 6, H. H. Raymond, president of the Clyde-Mallory Lines, was re-elected president of the association, and Edward J. Barber, president of the Barber Lines, was re-elected vice-president. Winthrop L. Marvin, vice-president and general manager, and J. Parker Kirlin, general counsel, were re-elected by the executive committee. The shipowners went on record unanimously in favor of the adoption of a continuous discharge book of reference and recommendation for seamen, similar to a system long in effect in the British merchant service and recently adopted by the Pacific American Steamship Association.

The following other elections and appointments were announced:

**Executive Committee.**—H. H. Raymond (ex-officio), president, Clyde-Mallory Lines; H. F. Alexander, president, Pacific Steamship Company; Calvin Austin, president, Eastern Steamship Lines; Edward J. Barber, president, Barber Steamship Lines; A. G. Bates, vice-president and general manager, Atlantic & Pacific Steamship Company; Ernest M. Bull, president, A. H. Bull Steamship Company; Harry C. Carr, assistant to president, Sun Company; P. A. S. Franklin, president, International Mercantile Marine Company; J. Howland Gardner, vice-president, New England Steamship Company; J. R. Gordon, traffic manager, Union Sulphur Company; Robert L. Hague, manager, marine department, Standard Oil Company of New Jersey; C. W. Jungen, manager, Southern Pacific Company; J. Parker Kirlin, of Kirlin, Woolsey, Campbell, Hickox & Keating; Edgar F. Luckenbach, president, Luckenbach Steamship Company; Winthrop L. Marvin, vice-president and general manager, American Steamship Owners' Association; Franklin D. Mooney, president, Atlantic, Gulf & West Indies Steamship Lines; Frank C. Munson, president, Munson Steamship Line; Eugene E. O'Donnell, manager, marine department, C. H. Sprague & Son; R. H. M. Robinson, president, United American Lines; Alfred Gilbert Smith, president, New York & Cuba Mail Steamship Company; A. D. Stebbins, president and general manager, Merchants & Miners' Transportation Company; W. A. Thompson, Jr., president, Texas Steamship Company; J. D. Tomlinson, vice-president, American-Hawaiian Steamship Company; H. B. Walker, president, Old Dominion Steamship Company; David T. Warden, manager, marine department, Tide Water Oil Company.

President Raymond appointed the following standing committees of the association:

**Committee on Bare Boat Charter and National Constructive Shipping Policies.**—J. R. Gordon, chairman, traffic manager, Union Sulphur Company; Ernest M. Bull, president, A. H. Bull Steamship Company; James Donald, president, States Marine & Commercial Company; Robert F. Hand, assistant manager, marine department, Standard Oil Company of New Jersey; T. J. Kehoe, acting general agent, Pacific Steamship Company; Edgar F. Luckenbach, president, Luckenbach Steamship Company; E. J. McCormack, treasurer, Moore & McCormack Company; Eugene E. O'Donnell, manager, marine department, C. H. Sprague & Son; Alfred Gilbert Smith, president, New York & Cuba Mail Steamship Company; Oakley Wood, vice-president, Barber Steamship Lines.

**Committee on Seagoing Personnel.**—Eugene E. O'Donnell, chairman, manager, marine department, C. H. Sprague & Son; A. G. Bates, vice-president, Atlantic & Pacific Steamship Company; Robert F. Hand, assistant manager, marine department, Standard Oil Company of New Jersey; A. S. Hebble, superintending engineer, Southern Pacific Company; T. J. Kehoe, acting general agent, Pacific Steamship Company; E. A. Kelly, assistant general manager, Clyde Steamship Company; A. J. McCarthy, manager, American flag steamers, International Mercantile Marine Company; F. C. Osborn, manager, ownership operations department, Munson Steamship Line; R. C. Thackara, vice-president, Luckenbach Steamship Company; J. D. Tomlinson, vice-president, American-Hawaiian Steamship Company.

**Representing United States Ship Operators' Association.**—M. H. Tracy, of M. H. Tracy & Company; Charles Yates, president, General Navigation Company.

**Tank Steamer Committee.**—D. T. Warden, chairman, manager, marine department, Tide Water Oil Company; H. C. Carr, assistant to president, Sun Company; Robert F. Hand, assistant manager, marine department, Standard Oil Company of New Jersey; P. H. Harwood, vice-president, Pan American Petroleum & Transport Company; James Kennedy, superintendent, marine department, Gulf Refining Company; W. A. Thompson, Jr., president, Texas Steamship Company (represented by J. P. Roney, general superintendent, The Texas Company).

**Technical Committee.**—William Francis Gibbs, chairman, chief of construction, International Mercantile Marine Company; Warren T. Berry, superintendent, marine construction, The New England Steamship Company; James Donald, president, States Marine & Commercial Company; A. S. Hebble, superintending engineer, Southern Pacific Company; Robert W. Morrell, Tide Water Oil Company; John H. Telford, superintending engineer, Munson Steamship Line; C. A. Ward, Jr., naval architect, Merchant Shipbuilding Corporation.

**Standing Committee on Marine Insurance and Protection to Distressed Vessels.**—Alfred Gilbert Smith, chairman, president, New York & Cuba Mail Steamship Company; William D. Macy, vice-president, New York & Cuba Mail Steamship Company; Oakley Wood, vice-president, Barber Steamship Lines, Inc.

**Standing Committee on Accounts.**—Paul Kuhne, chairman, treasurer, Luckenbach Steamship Company; C. F. Heitmann, secretary, A. H. Bull Steamship Company; accounting officers of member companies.

## The Outlook in Canada

The Shipping Federation of Canada, at its annual meeting held in Montreal February 8, elected R. W. Reford, of the Robert Reford Company, president; J. R. Binning, of Furness, Withy & Company, treasurer; and E. W. Foulds, of the New Zealand Shipping Company, assistant treasurer. The executive council will be composed of Messrs. Reford, Binning, Foulds; D. W. Campbell or A. E. Cook, W. R. Eakin, A. Mackenzie, A. M. Irvine, Major P. A. Curry and R. B. Teakle. Sub-committees were appointed as follows: Bill of lading, Colonel W. I. Gear, Major Curry and Mr. Binning; harbor equipment, Colonel Gear and Major Curry. Thomas Robb was elected secretary and manager.

### Loss of £3000 to £4000 a Voyage

Mr. Reford in his report as president said in part:

"During the past year the shipping industry experienced a period of depression which has rarely, if ever, been equalled, resultant upon the serious slump in trade and commerce which has affected the entire civilized world. . . . Yet while the trade of the world has shrunk to smaller dimensions than before the war, the world's aggregate shipping, which in 1914 stood at 49,000,000 tons, today stands at 62,000,000, so that owners necessarily have considerable difficulty in securing remunerative employment for this tonnage. They are face to face with the dilemma that owing to this scarcity of cargoes it is impossible to operate steamers except at a loss; while on the other hand, if vessels are tied up they deteriorate quicker than if kept in commission. Forced sales by auction, not only of single ships, but of whole fleets, have been seen of late, and it is feared that this drastic weeding-out process is likely to continue for some months to come. Almost without exception, every round voyage of a large vessel today shows a loss of between £3000 and £4000, and with many of them heavily mortgaged the outlook is not reassuring. Present freights would be profitable if working costs were on a pre-war basis; but these costs are still in the neighborhood of 100 per cent higher than before the war. . . .

### Labor Conditions Satisfactory

"Labor conditions at Canadian ports throughout the year were very satisfactory. At this port (Montreal), longshoremen, shipliners and checkers accepted reductions in wages of about 17 per cent, while for winter season 1921-1922 at the ports of St. John and Halifax, reductions amounting to 21 per cent and 16 per cent respectively were effected. It is pleasing to report that throughout these negotiations the most friendly spirit prevailed, and doubtless it was through this good feeling that the reductions were accepted without that bitterness which too often is the outcome of such negotiations. There was a plentiful supply of dock labor, notwithstanding the increased number of steamers coming to the port, chiefly owing to the fact that the steamers loaded full cargoes of grain."

Mr. Reford, after reviewing the progress of the Great Lakes-St. Lawrence deep waterway proposal, said that it, "in my opinion, is one not primarily of navigation but of power development. . . . No one can foretell what will be the reaction on the levels of the St. Lawrence below this port. The St. Lawrence waterway is Canada's priceless heritage, and everything possible should be done to protect and maintain our water levels at any cost."

## The Matson Report

The annual report of the Matson Navigation Company, made public at the meeting in February, indicates that the company weathered the disastrous year of 1921 in good condition. Net profits, it is true, decreased materially as compared with 1920, but a dividend rate of 12 per cent was maintained; assets show an appreciable gain; and the surplus account increased from $6,580,058 to $6,814,339. The book value of vessels showed an unavoidable increase, due to the addition of the large freighters Manulani and Manukai to the fleet; even so, the average valuation of steamships appears to be about $120 a gross ton, as compared with $82.38 in 1920. All floating property is lumped together in the current report, which prevents an accurate computation of book values a gross ton being made.

The following table compares the 1920 and 1921 reports:

| | 1920 | 1921 |
|---|---|---|
| Net profit, all sources ........ | $1,245,284 | $ 859,310 |
| Net profit, vessels' operat'n | 936,739 | 404,933 |
| Dividends ........ | 658,296 | 560,176 |

| | | |
|---|---|---|
| Dividend rate per cent........ | 18 | 12 |
| Surplus acct... | 6,580,058 | 6,814,339 |
| Assets .............. | 13,005,681 | 13,972,685 |
| Vessels carried at .................. | 5,181,935 | 7,923,430 |

All directors and officers of the company were re-elected.

There is no immediate prospect of construction by the Matson Company, an officer stated. This announcement was not altogether unexpected, as the entire Hawaiian sugar crop will be refined on the Pacific Coast this year and the freighters Manulani and Manukai, built primarily for the Atlantic, will be kept on a shorter route. The effect of this will be to add to the company's tonnage. Inasmuch, also, as the company's plans were for large express combination vessels, according to reports, the entrance of the Los Angeles Steamship Company into the Hawaiian passenger service may have had a deterrent effect for the time being. The decision of Hawaiian planters to send no sugar to the Atlantic this year has led the Matson Company to turn back its two 535's, which had been operating between Baltimore and Hawaii via the Pacific Coast, to the Shipping Board.

## The N. Y. K. Withdrawal

The Nippon Yusen Kaisha announces that its four large passenger vessels, Fushimi Maru, Suwa Maru, Kashima Maru and Katori Maru, will be withdrawn from the Orient-Puget Sound service and returned to the Yokohama-Suez-London route. "These four steamers were originally designed and built especially for the European service through tropical waters," says the announcement, "but were temporarily placed on the Puget Sound run during the war. Now that normal conditions again prevail in European waters, they will be restored to their former run. In order to replace these vessels on the Puget Sound line, the steamers Kaga Maru, Iyo Maru, Shidzuoka Maru and Yokohama Maru will operate here for the time being, until they in turn will be replaced by a new type of vessel especially designed for this service, being by far larger, faster and more luxurious than any vessels heretofore calling at Seattle."

This action of the N. Y. K. may be due in some degree to the present trans-Pacific depression, resultant rate-cutting and keen competition, and also to the better trade offering between the Orient and Europe. Even if these different factors have entered in, however, it would be folly of the worst sort to infer that the N. Y. K. has been forced out of the trade. The line is in a position to give any company in the world a hard struggle, as every well-informed shipping man, both American and foreign, knows; and its promise to place "larger, faster and more luxurious" vessels in the Puget Sound trade spells trouble for its competitors.

## The A-G-P

The assumption by A. P. Hammond of the Pacific Coast management of the Atlantic-Gulf & Pacific is generally regarded as the beginning of a new era in the affairs of that corporation. Heretofore it has not held its own with its competitors in the intercoastal trade, although it possessed excellent vessels and had adequate financial backing. No good end would be served by an analysis of the causes of its troubles; but Mr. Hammond appears to be the man who can rectify the mistakes of the past.

Mr. Hammond has been joined by two of his former subordinates in the Luckenbach offices: C. O. Burgin, who has assumed charge of westbound traffic, and R. E. Devinney, who will supervise eastbound business. Mr. Burgin has been succeeded as head of the Luckenbach traffic department by J. H. Todd, secretary of the Shipping Board conferences.

## Business Improves

Shipping conditions in general are showing such a marked improvement that there is reason to believe that the change, which began nine months ago, actually is permanent and that the world is on the mend again. This statement might have been hazarded six months ago, but at that time a good week was followed by a bad, so that judging of the general trend was quite difficult. Now, however, reports of improvement come from so many quarters that the change scarcely can be anything but general; yet it is worth emphasizing that trade is still greatly depressed.

### December Cargo Report

Chief among recent symptoms of gradual recovery is the December cargo report of the Shipping Board, which shows that dry cargo, bulk oil carried in tankers being excluded, increased 609,500 tons, or 21 per cent, over November. This was the first gain recorded since the middle of 1921, when coal exports jumped greatly as a result of the British miners' strike. The increase of December, however, was entirely in exports, which gained 32 per cent over November, though they remained 45 per cent less than the business of December, 1920. December, 1921, imports declined by 1180 tons as compared with those of November, and 412,339 as compared with those of December, 1920. Tanker cargoes increased 4 per cent in December over November. Dry freight continues to show a pronounced disproportion between imports and exports in tonnage, December overseas imports aggregating 987,911 long tons and exports 2,521,132.

Despite the general depression of 1921, which was worse than that of 1920, Panama Canal statistics show little change. Cargo carried through the waterway decreased by 527,771 tons, or from 11,236,119 in 1920 to 10,708,338 in 1921; but this falling off, even though it represents the cargoes of fifty large vessels, was relatively so slight as to be really encouraging. During the year the number of vessels using the canal was 2783 as compared with 2814 in 1920; but both net tonnage and tolls collected increased slightly.

### Wheat and Lumber Grow

Another encouraging bit of news comes from Portland. During the seven months ending January 31 the Columbia River shipped 26,069,525 bushels of wheat, while for the corresponding period of 1920-1921 shipments aggregated only 13,106,872; and Puget Sound shipments increased from 4,063,604 bushels in 1920-1921 to 6,276,019 bushels in 1921-1922. These gains are made despite a falling off in shipments to Europe; although that continent is taking less, a surprisingly large movement to the Orient has developed.

Coastwise lumber trade on the Pacific is improving rapidly. In fact, most of the steam schooners that were idle a few months ago have been returned to service. Astoria reports that during January the Columbia River shipped 68,903,211 feet, which exceeded the shipment of any month of 1921, and is regarded as especially remarkable in view of the fact that the lumber market usually is suffering from a midwinter slump in January. Of the 68,000,000 feet shipped in January, more than 40,000,000 went to foreign ports.

## Great Lakes Traffic

If deep-sea operators believe that they are alone in their woes they are badly mistaken. Consider the situation of the Great Lakes owners, who have experienced the worst year since 1908. During 1921 cargo handled through the Soo Canals amounted to 48,259,254 short tons, as compared with 79,282,496 in 1920, the decrease being 39 per cent. It was due almost entirely to the slump in steel-manufacturing, as a result of which shipments of iron ore from the Duluth district fell from 56,780,498 tons in 1920 to 22,595,323 tons in 1921. Coal, wheat, lumber and grain other than wheat increased.

"An idea of the commercial importance of these waterways," says Commerce Reports, "may be gained when it is considered that the tonnage passing through the Soo Canals during the season of 1920 (79,282,496 short tons) was approximately three-fourths as much as the total exports and imports of the United States for the year ended June 30, 1921 (107,614,732 short tons), was more than three times as great as the total export and import tonnage of the port of New York for the year ended June 30, 1921 (23,676,937 short tons), and was over four times the traffic through the Suez Canal for the year 1920 (17,574,657 short tons), even exceeding the latter's total for the five years, 1915-1920."

Commerce Reports might have added that this enormous business was done in nine months, virtually in seven, inasmuch as April and December, 1920, together witnessed the passage of only a little more than 2,000,000 tons.

Eastbound tonnage was approximately four times westbound.

## Shipping Briefs

The Canadian Pacific Steamships, Ltd., has arranged to place the Empress of Canada and Empress of Australia in the trans-Pacific trade, say advices from Vancouver. The first sailings will be in April. On the eastbound voyages, it is reported, the vessels will call at Honolulu.

* * *

The B. F. Dillingham Company has been appointed Honolulu agent of the Los Angeles Steamship Company, which will place the Shipping Board liners Aeolus and Huron in the Los Angeles-Honolulu service.

* * *

The Northwest Shipping Company will act as Portland agent of Crowell & Thurlow, whose intercoastal service is represented on the Pacific Coast by Sudden & Christenson as general agents.

* * *

The Los Angeles General Steamship Agents, Los Angeles, have organized the Southern California Stevedoring & Freight Handling Company, to handle cargo of all vessels represented by the former.

* * *

The Pacific Steamship Company, as agent of the Blue Star Line, announces the inauguration of a refrigeration service with probable monthly sailings between the Pacific Coast and the United Kingdom. London, Liverpool and Glasgow will be British ports of call.

* * *

The Board of Harbor Commissioners, Honolulu, has reduced lumber tolls from 30 to 22½ cents for offshore shipments and from 15 to 11 cents for inter-island lumber, effective May 1.

* * *

The Hamburg - American Line is beginning a service through the canal, to the West Coast of Central America, says the Panama Canal Record. The steamer Antiochia, of 3100 gross tons, is due to arrive at Cristobal on January 13, from Hamburg via Bremen, Curacao, La Guaira, Puerto Cabello, Puerto Colombia, and Cartagena. After handling cargo at the canal ports she will proceed up the West Coast as far as Champerico, Mexico, calling at one port of each of the Central American countries on the way, and returning to Balboa within about a fortnight of her passage through the canal. No advice has been received as to the probable frequency of the service.

* * *

The Senate has passed a bill authorizing the Shipping Board to acquire a site for a fuel and fuel oil station and fresh water reservoir on Hazel Island, St. Thomas, Virgin Islands, at a cost of not more than $50,000.

* * *

The International Mercantile Marine announces that direct sailings between Canada and Germany will be begun in the spring, the Vedic, a 9300-ton third-class vessel, making the first sailing from Halifax April 23.

* * *

The Holland - America Line will carry passengers hereafter on the vessels of its Pacific-European line.

* * *

The 535 Lone Star State has been assigned to the United States Lines by the Shipping Board.

* * *

The Interstate Commerce Commission announces that the new export bill of lading will become effective March 15 instead of February 15, as formerly announced.

* * *

The Toyo Kisen Kaisha's San Francisco office will be removed March 15 from the Merchants' National Bank building to 551 Market street. Sudden & Christenson have removed from 110 Market street to 230 California.

* * *

The Eastern Steamship Lines announce that the service of the Maine Steamship Line between New York and Portland, Maine, which was suspended during the war, will be resumed soon.

* * *

The Pacific States Express Company has been formed to operate a service on the steamships Yale and Harvard between Los Angeles and San Francisco. G. R. Anderson is president.

* * *

Sudden & Christenson have taken over the Pacific Coast representation of the Crowell & Thurlow intercoastal steamships, heretofore represented by Struthers & Dixon and operated under the name of I. S. C. Lines. The Los Angeles Steamship Company will act as Los Angeles agent.

* * *

The Luckenbach Steamship Company announces the purchase of the Norwegian steamship Argentina, formerly the American-Hawaiian steamship Honolulan. Under the name of Jacob Luckenbach she will be used in the Gulf-Pacific service.

* * *

The San Francisco offices of the North German Lloyd, closed in 1916, have been reopened with Charles E. Duisenberg in charge. His quarters are in the Mills building.

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**Captain James Baird,** president of the Victoria and Vancouver Stevedoring Company, has been elected president of the Northwest Waterfront Employers' Union.

**Ben C. Dailey** has resigned as managing director of the Foreign Trade Club, San Francisco, and has been succeeded by N. A. Davis, editor of World Trade.

**Captain E. C. Genereaux** has resigned as port captain of W. L. Comyn & Company, San Francisco, to enter business on his own account.

**O. B. Kibele,** formerly of the Schaw - Batcher and Southwestern shipyards, and **Captain C. A. Heygendorff** have formed a marine surveying partnership in Los Angeles.

**Captain J. R. Rundberg** will act as owners' representative on the Pacific Coast of the Trans-Atlantic Steamship Company, which recently announced a world service.

**Captain J. J. Meany,** former inspector of hulls, Steamboat-Inspection Service, and more recently in charge of the recruiting bureau of the Shipowners' Association of the Pacific Coast and Pacific American Steamship Association at Los Angeles, has taken command of the steamship Lewis Luckenbach.

# Marine Insurance

CHARLES F. HOWELL, Eastern Contributing Editor

## Marine Prospects Poor

There is nothing too encouraging in the best that can be said of the outlook of marine insurance in any part of the world. Trade conditions, competition and excessive losses have depressed the business to an unusual degree. The situation has been summed up by President J. B. Levison of the Fireman's Fund, who stresses the following as outstanding features of the hour:

1. The great depression in shipping and the shrinkage in foreign commerce, which is naturally reflected in the volume of premiums written.

2. The excessive number of companies competing for the business, due to the entrance of almost every fire company in America and England into marine underwriting during the war. It is probably within the mark to say that the aggregate volume of marine premiums written in England and the United States in 1921 was considerably less than 1913 (the year before the war) with many times the number of companies competing.

3. The advent into marine insurance during the war of a large number of new brokerage firms with no accounts on their books and no knowledge of the business, who are endeavoring to hold their position by practices which must inevitably result disastrously to underwriters.

4. Unusual and abnormal losses on account of the breakdown in the morale of the peoples of the world at large, lack of proper care in handling cargoes, and a distinct lowering of standards in the upkeep of vessels owing in a large measure to low freight rates.

5. Operation of laws in the various states which were primarily designed to apply to fire insurance and have been extended to marine, placing marine writing offices at a distinct disadvantage as compared with companies of other countries.

Mr. Levison sums up thus:

"Frankly, I see no encouragement in the immediate future for marine underwriting either in the United States or England, or until the old established marine brokerage firms and marine offices have reached the point where the business will be conducted along lines approximating what was done prior to the war and which will make possible a profit to underwriters. This does not appear likely at the present moment."

## Buffalo Storage Losses

Inspectors and surveyors have returned from an exhaustive examination of the conditions and damages attendant upon the stranding of nearly thirty steamers at Buffalo during the heavy storm of the closing days of last year. It will be recalled by readers of this department that those vessels were loaded with wheat for winter storage, a custom long observed and, as a rule, without serious consequences. Captain C. B. Wheldon, who represented many of the larger New York marine insurance interests, has returned from his survey of the stranded steamers. He is of opinion that a similar disaster would be most unlikely again. Much of the damage resulted from the collision of the boats driven from their moorings, and many of them had to have their cargo discharged and to be taken to various Lake ports for repairs to their hulls. In some instances bunker fires caused a tainting of the grain. About 600,000 bushels of grain had to be discharged. It is estimated that the cargo loss will approximate $70,000, and the damage to hulls will entail about a half million dollars.

## Atlantic Mutual's Statement

There is always a great deal of interest in the annual figures of the Atlantic Mutual Insurance Company, due to the specializing of that institution in marine writings and the broad extent of its operations. This year the interest has been even greater than usual, due to the conviction that 1921 witnessed the climax of one of the most crucial periods in the history of marine underwriting. It was therefore gratifying to see by the annual statement of the Atlantic Mutual, published on January 26, that an excellent showing was made in the face of the abnormal conditions prevailing all over the world. The statement shows earned premiums for 1921 of $4,851,944.71; this is somewhat below the earned premiums of 1920, but is in excess of the company's pre-war writings. The net losses paid after deduction of salvages and reinsurance amount to $2,047,105.94, representing a larger net loss ratio than usual, but not excessive in view of the unusual conditions. At the close of 1921 the company's balance was $6,242,251.65, which represents the balance before declaration of dividend. After declaration of the usual dividend the balance remaining is practically unchanged from the previous year, when a much larger balance before dividend was shown.

## What's Moving

Refined sugar is now being shipped freely from this country to England and European ports, and the marine insurance rate is low. There has usually been a fair margin of profit on such coverage in normal times, but it is much more of a problem now in view of the moral hazard and the additional fact that carriers are employing under-grade and poorly-managed ships.

Foodstuffs, cotton and copper are among the commodities that are being written right along. But there is too little of them to suit the underwriter. The dull days of the close of 1921 are continuing right into the new year. Losses are somewhat curtailed, but the overhead is with us all the time. One trade route which appears to be rapidly growing and which offers something of encouragement is that between the West Coast of the United States and Europe via the Panama Canal. It is said that recently one of the American-Hawaiian steamers was obliged to refuse 3000 tons of cargo because of excessive offerings. Flour, grain and canned goods composed a large proportion of the cargo.

## Inferior Vessels Used

With so many steamers out of employment at this time, it seems strange that merchants are willing to follow the penny-wise-and-pound-foolish policy of attempting to use inferior vessels. Within the space of a few days recently, there were offered in the New York market for the carriage of sugar from Cuba a cargo by a steamer built in 1890 on the Great Lakes for Lake trade, and another by a barge (in tow) to a United States Gulf port. The above steamer had, it is true, been considerably altered, but even so she could not compare with one built especially for ocean service. Why use such a steamer, and why use a barge? "Cheap freight," is the answer; but will this not be more than offset by the necessary high rate of interest? Underwriters are at a loss to understand why, as at the present time, when so many suitable vessels are available, merchants will resort to such carriage as the above mentioned. Is it worth while to take the risk of having a more or less damaged cargo, even though the freight rate is low and insurance obtainable? True, the underwriters will pay the physical damage, but who is to make good the injury arising out of the interruption to the merchant's business? There is no insurance that will cover that. Here is a fact that is too often overlooked by shippers.

## Russian Relief Cargoes

Among the underwriting features of the moment is the coverage of relief shipments by this country to Russia. In the matter of grain, thirty-five or forty vessels have already sailed, some of them bound for the Baltic and some for the ports of the Black Sea. They carried corn principally, and the value of the cargo in each instance ran from $250,000 to $500,000. The marine insurance rate ran from 1¼ per cent to 1½ per cent. Other sailings are scheduled right along. These shipments are for the dual accounts of the Hoover Relief and the United States Relief arrangements.

## Great Lakes Underwriting

Final figures on Great Lakes tonnage for 1921 indicate that the most pessimistic reports of conditions there were not exaggerated. Registered net tonnage of vessels passing through the Soo Canal in 1921 totaled 32,184,240, as compared with 58,194,083 in 1920, a reduction of approximately 45 per cent. Shipping interests on the Lakes look for better times in 1922, as the demand for coal and ore is expected to be somewhat near normal, and with general cargo moving more freely Lake underwriters should get a better volume of premiums.

## Sailing Vessel Losses

Numerous accidents to sailing vessels have been reported during the past few weeks, and they direct attention to the hazards surrounding the insuring of this type of risk. The winter season, of course, is always a serious time for sailers, because of the heavy storms encountered, but in these days of poor freights an underwriter cannot be too cautious in the examination of sailing vessel risks. Causes of total losses are often never known. Thirty or more sailers have produced damage claims in the last week or two.

## Cuban Conditions Improve

There is a steady betterment in underwriting and business conditions at Cuba. The theft and pilferage hazard, which at one time was about the worst there of anywhere in the world, is now materially improved. Shipments are being removed with much more dispatch, sometimes within five days of discharge, which is ample for the consignee to take delivery. The dock strike is insignificant; the Havana police man the trucks. The great difficulty has been that Cuban merchants are greatly over-stocked. Surveyors state that there is enough American goods in the island right now to last for another year. This is particularly true as regards cotton piece goods, the American market for which is practically dead. Money is now coming in to Cubans from the sugar crop, and that is relieving the financial situation greatly.

C. F. H.

## Captain Alwen's Victory

In a decision handed down in the United States District Court, Seattle, Judge Jeremiah Neterer holds that Captain William Fisher, supervising inspector for the Eleventh District, Steamboat-Inspection Service, was without warrant of law in suspending the license of Captain John Alwen, master of the Shipping Board steamship West Hartland, which collided with and sunk the Pacific Steamship Company's Governor April 1, 1921. Captain Fisher took cognizance of the wreck directly and without appeal having been made from the decision of the local board, which had exonerated Captain Alwen, and it was because of this action that Captain Alwen appealed to the United States District Court. In this appeal he has won a signal victory, inasmuch as the decision means that his license is restored.

Judge Neterer's decision is wholly upon the legal questions involved and does not touch in any degree upon the intrinsic justice of the punishment administered by Captain Fisher. For that reason it sheds little light upon the question of responsibility for the loss of the Governor. Its principal interest lies in its sharp defining of the duties and powers of a supervising inspector and, because of that, probably settles definitely a vexed question. The decision follows in full:

IN THE UNITED STATES COURT FOR THE WESTERN DISTRICT OF WASHINGTON, NORTHERN DIVISION.

John Alwen, Plaintiff,
vs.
William Fisher, Supervising Inspector for the Eleventh District, Steamboat-Inspection Service, Department of Commerce of the U. S.; Donald Ames, and Harry C. Lord, Local Inspectors, Steamboat-Inspection Service, Department of Commerce of U. S., Defendants.

In Equity—No. 276-E

DECISION

Frederick Milverton, Special Assistant U. S. Attorney, attorney for defendants.

Howard G. Cosgrove, attorney for plaintiff.

Neterer, District Judge.

Shortly after midnight, April 1, 1921, the S. S. West Hartland and the S. S. Governor collided, as a result of which the Governor immediately sank. The plaintiff was acting master of the West Hartland. After the collision the board of local inspectors investigating the collision found Harry H. Marden, in charge of the S. S. Governor, culpable, and exonerated the plaintiff master in charge of the S. S. West Hartland, and filed written findings and decision of the 16th of April, 1921. The proceeding is entitled:

> "In the matter of the investigation of the collision between the S. S. Governor and West Hartland April 1, 1921, off Point Wilson, resulting in the sinking and loss of S. S. Governor."

On the 16th of May following, the defendant supervising inspector sent the following letter to the master of the West Hartland:

> "You are hereby charged with violation of the U. S. R. S. Statutes, Secs. 4439 and 4450, with negligence, unskillfulness and inattention to your duty as master of the S. S. West Hartland on the night of March 31, 1921, and the morning of April 1, 1921, in this, that being in doubt as to the course and intention of the S. S. Governor, as that vessel and the West Hartland were approaching each other, your failure to signify your lack of understanding, which resulted in the collision of the West Hartland and Governor; and further, in this, that, having signaled the governor to hold course and speed, failed to do so, but without informing the Governor thereof, you stopped and reversed engines, which resulted in the collision of the West Hartland and Governor; and further, in this, that when the collision was imminent you did not take proper measures to avoid collision between the West Hartland and Governor.
>
> "At your earliest convenience you are directed to appear at this office to make answer to these charges. You may be represented by counsel if you so desire."

Thereafter, on July 22, the supervising inspector rendered the following findings, conclusions and decision under the style:

> "In the matter of the trial of charges preferred by the U. S. Supervising Inspector, Eleventh District, against Captain John Alwen, master of the S. S. West Hartland, in connection with the

FIREMAN'S FUND
Insures Hulls, Cargoes,
HEAD OFFICE: CALIFORNIA AND SANSOME
JOSEPH HADLEY, European Agent
3 LOTHBURY, E. C.
LONDON
E. A. VALENTINE, Resident Agent for Oregon
714-715 BOARD OF TRADE BUILDING
PORTLAND, ORE.
FRANK G. TAYLOR, MANAGER, PACIFIC NORTHWEST BRANCH

collision between that vessel and the S. S. Governor on the morning of April 1, 1921." . .

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DECISION—"I, therefore, hold and it is my decision that Captain John Alwen is guilty of negligence, unskillfullness, and inattention to his duties as master of the S. S. West Hartland . . . in connection with the collision between that vessel and the S. S. Governor, and his license as master and pilot, No. 73609, issue No. 5, 5, dated December 2, 1918, is hereby suspended for a period of two years, from this date, July 22, 1921. Captain Alwen is directed to deposit his license with the U. S. local inspectors at Seattle, where it will remain during the period of its suspension."

The plaintiff contends that the supervising inspector acted without jurisdiction and that his decision is void; that he has no speedy and adequate remedy at law. The defendant inspector claims that he had jurisdiction, and acted in accordance with law; that plaintiff appeared, presented testimony, and may not now complain. The plaintiff admits appearing, but contends that he protested the jurisdiction and objected to the proceedings. If the supervising inspector was without jurisdiction and his action without warrant of law the appearance of the plaintiff did not confer jurisdiction. The supervising inspector may do that which the law authorizes him to do through procedure which is provided. It is conceded that under the law prior to June 10, 1918, 40 Stat. 602, there was no warrant of law which gave the supervising inspector the right to proceed as he did in this case. It is contended that under the act supra, the supervising inspector may, within thirty days after any decision of the local board of inspectors, review such decision upon his own motion, and that after such review he may revoke, change, or modify such decision. The act supra is entitled: "An act to provide for appeals from decisions of boards of local inspectors of vessels and for other purposes."

The particular object of the act in this case is to provide for appeals, and "That whenever any person . . . feels aggrieved . . . he may appeal . . . to the supervising inspector . . . provided, however, that application for such re-examination of the case by the supervising inspector . . . shall be made within thirty days after the decision . . . appealed from, shall have been rendered."

The word "such re-examination" refers to the word appeal in the preceding portion of the section, hence, "appeal" and "such re-examination" must be held as synonymous terms. The rules and regulations provided pursuant to law, Sec. 4405 R. S., and which rules have the force of law, Fridenberg vs. Whitney, et al, 240 Fed. 819, 824, under title II, Appeal to Supervising Inspector, Sec. 1, provide:

> "The inspector, upon notice of appeal from the decision of the local board, provided said notice of appeal shall be made within thirty days of the decision of the local board, shall give notice in writing to said board to forward certified copy of their decision together with the charges and all evidence in writing on file in their office."

The prerequisites, therefore, necessary to effect an appeal, are plainly set forth in the rules and regulations, which have the force of law.

Prior to the act supra there was no provision for appeal except by an interested party, 240 Fed. 817, and the following was provided in Sec. 2: ". . . Any supervising inspector may, within thirty days, thereafter, upon his own motion review any decision or action . . . within his district." And Sec. 3 provides that, if the supervising inspector, upon his own motion, decides his review, the same provisions apply. The same procedure applies in effecting appeal by the supervising inspector as to an appeal by an interested party, and the same notice must be given to the local board. In other words, the case must be removed from the board of local inspectors. Upon removal of the case the supervising inspector must then proceed under the same rules prescribed for the hearing before the local board (Rule 2). The procedure provided is definite and explicit.

Appeal has a definite, clear and well understood meaning in all legal procedure, and its function is to revise and correct the proceedings already instituted and does not create that cause, Wilson vs. Mason, 1 Cranch, 44 (U. S.), 2 Law Ed., 60. An appeal is the removal of a cause from a court of inferior to one of superior jurisdiction for review. Greenwood County vs. Town of New Hartford, 32 Atl., 933 (Conn.). Appeal is a process of civil origin and removal of the cause entire for review and re-trial. Lyle vs. Barnes, 40 Miss., 608. The legal significance of appeal means appellate process which opens the former judgment and sends the case to a higher court for a trial de novo upon the same facts or new facts regardless of the former trial, Richardson vs. Henderson, 37 S. E., 653 (W. Va.). The record shows that there was no removal. The only official act of the supervising inspector is filing the charges supra, on the 16th day of May, without reference to the proceeding before the local board in the "matter of the investigation of the collision . . . . ." by the local board. Lord, one of the local inspectors, in answer to: "Q. Was there ever any appeal taken by any one from that decision to the supervising inspector? A—No." The supervising inspector testified that when the findings and decision of

INSURANCE COMPANY
Freights and Disbursements
STREETS, SAN FRANCISCO, CALIFORNIA

W. H. WOODRUFF, Manager, Southern California Marine Branch
230 BYRNE BUILDING
LOS ANGELES

CHARLES R. PAGE, Manager
ATLANTIC MARINE DEPARTMENT
72 BEAVER STREET NEW YORK

309 COLMAN BUILDING, SEATTLE, WASHINGTON

the local board were submitted "in the usual way" on April 18, that he began a very thorough study and analysis of the same, and that on the 14th of May he sent a telegram to the "bureau" as follows: "My investigation satisfies me that charges should be filed against master, West Hartland, who was exonerated in investigation of local board. Have I power to file charges direct and proceed to try case, or should I order local board to file charges?" And in response to this telegram on the morning of the 16th of May he was advised by the "bureau" that "he did have authority to prefer the charges and conduct trial." He further testified: "Although my review of the testimony convinced me that Captain Alwen was culpable in his management of the West Hartland, I desired to afford him an opportunity to testify in his own behalf, and, in order to proceed in a definite way, I decided to present the matter in the form of charges."

It appears to be conclusively established that no appeal was taken, and that no review in any legal sense was had. This is further confirmed by the fact that the "investigation" of the local board concerned others named in the decision, whereas, the "direct charge" concerns only one of the parties named in the decision, the plaintiff; and from the decision of the supervising inspector. The act supra provides that the decision of the local board may be revoked, changed or modified, by the reviewing officer. The decision of the supervising inspector does not refer to the decision of the local board. The title of the proceeding is a separate and distinct title, from the proceeding before the local board, and the testimony of the supervising inspector is to the effect that the proceeding was a "direct charge," rather than a review on appeal, although, in proceeding on review, after appeal, he was empowered by the act supra, as well as by the rules and regulations, to hear further testimony, and to administer oaths to witnesses. The proceeding is somewhat akin to an appeal in admiralty trials, where the Circuit Court of Appeals, in reviewing the case, may receive further testimony in determining the pending issue. It is not contended at bar, nor suggested in the brief, and I know of no warrant of statute that empowers the supervising inspector to file charges before himself, and hear and determine the same upon an issue such as is here presented. The sole function is what the title indicates, Supervising Appellate Tribunal, and to determine an issue on appeal the matter must be removed from the local inspection court to that of the supervising inspector's appellate court, within thirty days, and provision is made by statute for the removal and the procedure provided by law; and after removal the matter may be considered upon the evidence before the local board, or further testimony may be taken. The fact that the supervising inspector, on June 24, "notified" Captain Alwen, the plaintiff, that "in this hearing" he was proceeding as on continuance of the review "undertaken of the decision of the local inspectors'" cannot confer jurisdiction, because no appeal for review had been taken and the proceeding instituted was a "direct charge." The decision of the supervising inspector is without warrant of law and may not be enforced.

## An Alaska Aftermath

As a result of the wreck of the steamship Alaska and of letters written by the Neptune Association to Senator Jones and Representative Edmunds, the board of supervising inspectors, Steamboat-Inspection Service, has held a hearing on the use of submarine bell apparatus. The Neptune Association gave voice to a belief, which had been expressed frequently, that had the Alaska been equipped with apparatus for receiving submarine-bell signals the wreck probably could have been avoided. In addition to wishing to make navigation safer, the association desired to save masters from responsibility for losses when all necessary equipment had not been provided for the proper operation of vessels.

Several members of the association, among whom were masters actively engaged in navigation, testified that submarine bells were installed at many dangerous places, both in United States and in foreign waters; that with proper receiving apparatus the signals could be heard at distances up to fifteen and twenty miles, the distance varying with circumstances; that the expense of receiving apparatus was not great, approximately from $250 to $300 a year rental; that the obligations of masters to the public, owners and underwriters could be fulfilled better if apparatus were installed; and that, inasmuch as the government had installed bells at many places, American vessels exceeding 2500 registered tons should be equipped with apparatus.

Testimony offered at the hearing indicated that the master of the Alaska was so negligent that even submarine-bell receiving apparatus probably would not have prevented the wreck; but this fact cannot be accepted as any argument against the general installation of apparatus. When members of the board inquired as to what other equipment should be installed, the only suggestion made by witnesses was that compasses should be of a truer and more uniform nature. The gyroscopic compass would appear to answer this demand satisfactorily.

At the hearing there were various other issues raised, among which was that masters should be tried by a jury of shipmasters instead of by local inspectors; but General Uhler, the founder of the present system, argued that a master would receive better treatment under the present system than he would under any other of which he had heard. The Neptune Association's representatives appeared to be in favor of a restoration of the old power of a master over his crew, in order that he might more efficiently discharge his obligations, inasmuch as he had to be very careful in these days of the Seamen's Act.

## London Loses Heavily

Pacific Coast underwriters had cause to congratulate themselves during the month that they had written no risk on the steamship Northern Pacific, which burned and sank off the New Jersey coast February 8 while en route from Hoboken to the Sun Shipbuilding Company's yard at Chester. The entire risk had been placed in London. British underwriters will pay $1,200,000, according to report in San Francisco. Their premium was three-eighths of 1 per cent, but there is some disagreement between different authorities as to precisely the risk covered. However, the question is academic, because the vessel has become a total loss under the policy.

### Cost Company $1,000,000

It is reported that the Pacific Steamship Company is endeavoring to obtain the sister, Great Northern, for its coastwise trade, but that the Navy Department is loath to give up the vessel, which is serving as flagship of the Atlantic fleet. Both vessels were built by James J. Hill in order that two railroads for which they were named might gain access by water to San Francisco. After plying between San Francisco and the Columbia River during 1915 and 1916, with occasional voyages to Honolulu, they were sold to the government and used during the war as Atlantic transports. They made remarkable records, largely on account of their speed of 23 knots or more. The loss of the Northern Pacific is not only a financial disaster, but it removes from the American merchant marine a vessel that is not at all likely to be duplicated for years. The Pacific Steamship Company paid the government $1,000,000 for her, and her reconditioning would have cost about $500,000 more.

### Bessie Dollar Battered

The worst mishap of the month on the Pacific was the battering that the Dollar steamship Bessie Dollar received February 6 while bound from Vancouver to the Orient. At 2 o'clock that afternoon, in a heavy sea but not unusually severe weather, a wave struck the vessel on the starboard side. She did not rise well, and water poured over her to a depth estimated at thirty feet, breaking the chains that bound her deck-load, tearing away the bridge, crumpling the captain's quarters, wrecking the saloon, carrying away three boats, killing a Chinese steward and injuring Captain M. Ridley. Her mainmast was bent over and fell on the deck that night.

Yarrows, Limited, submitted the lowest bid for repairs.

Considerable damage was done by the Shipping Board tanker Stockton in Los Angeles Harbor February 10. She sank three small boats, damaged a ferry and bent the bow of an Eagle boat, besides tearing a hole in her own bow. She was sent to the yard of the Los Angeles Shipbuilding & Drydock Company for repairs.

## An Improved Tone

Pacific underwriting appears to be improving steadily though slowly. Some little new hull business has developed in the insuring of square-rigged vessels bought on the Atlantic for the Alaska salmon trade, and cargo business, however "spotty" it may remain, is larger than it was during the latter part of 1921. On the other hand, the aggregate volume is decidedly below that of a year ago.

* * *

The House failed to take action February 13 on the Edmonds model insurance law for the District of Columbia. Although the legislation was brought up and explained by Representative Edmonds, the House adjourned without taking action. The bill went through the Senate recently without even being read or a record vote taken. Efforts have been made from time to time to have the House take it up, but there has been so much opposition to it that up to the present time it has simply remained on the calendar. It is predicted that this will be the last heard of the proposition at this term of Congress.

* * *

"Witless pumping out of No. 2 tank" of the steamship Canadian Importer is blamed by a board of inquiry for the near foundering of that vessel last August.

# Rates and Freights

## Far East Reorganization

At a series of meetings held in New York during January, the North Atlantic-Far East Conference, which had practically ceased to function, was reorganized with all lines engaged in the trade, either formal members or pledged to observe rates. What success the conference will have in maintaining tariffs remains to be seen, but there is no reason for anyone to be unduly optimistic. There is no gainsaying the fact that the reorganized body has started off well, yet it faces conditions little better than those that resulted in the upheaval of last summer and fall, when rates were slashed unmercifully, and there accordingly is reason for awaiting results before forming judgment.

Should the conference succeed in maintaining rates and forcing them to sufficiently high levels, the Pacific Coast would benefit greatly, because the raising of Atlantic rates must precede any stiffening of trans-Pacific tariffs, or indeed Atlantic rates must go higher before the Pacific Coast could hope to obtain any considerable overland business in existing circumstances and at going rates. In other words, with the trans-Pacific steel rate at $5 and the Atlantic-Far East rate at $10, practically all steel exported to the Orient will move through Baltimore, Philadelphia or New York, and little or none will move westward over transcontinental rail lines.

In general the reorganized conference has adopted going rates. By so doing it has given a mantle of sanction to what already has been done. Steel is a principal exception, the rate having been raised from $8, the approximate market, to $10.

### Progress of Organization

The first meeting was held in the Shipping Board offices, 45 Broadway, New York, January 6, with the following lines represented: Prince, O. S. K., Barber, T. K. K., Mitsui, Dollar, N. Y. K., Suzuki, Kerr, K. K. K., U. S. S. B. It will be observed that Funch, Edye & Company and Norton, Lilly & Company, representing the Ellerman and Holt interests, were not represented.

Mr. Love opened the discussion by stating that the purpose of the meeting was to stabilize rates in the North Atlantic-Far East trade. After a review of conditions the Japanese lines, all of which had representatives present, stated that they were willing to participate in a conference that included all lines in the trade. At first blush this might appear as a promise that gave nothing, because some lines were notoriously unwilling to obligate themselves; and other difficulties were cast in the way when it was stated that the conference must not permit any company to absorb any differential either in regard to freight rates or insurance, and when Mitsui and Suzuki were told that the other carriers would not agree to their assessing a lower rate on their own cargo than was assessed on any like commodities carried in their vessels. However, the Japanese lines that had insisted upon differentials and the privilege of transporting their own cargo at their own rates agreed to seek assent from their principals to their joining the conference without these privileges.

### Isthmian's "Peculiar Position"

The demand that all lines in the trade join appeared to present more of a problem, inasmuch as Mr. Love stated that the Isthmian Line's "peculiar position" prevented the possibility of its joining. He probably referred to the insistence of Judge Gary that the Steel Corporation's vessels avoid the appearance of combining in restraint of trade. At any event, the Isthmian was not alone in its refusal to join, because Ellerman and Holt, represented by Funch, Edye & Company and Norton, Lilly & Company, would not become members, although they gave assurance that conference rates would be maintained. The Dollar Line assumed the same attitude. Thereupon the meeting was adjourned, with the understanding that Mr. Love would negotiate with Ellerman, Holt and Dollar with a view to forming a conference based on limitation of tonnage in the trade. This proposal came to naught, as the event proved, but it was quite important as indicating the belief of such responsible operators as these that tonnage should be reduced.

At the next meeting, held January 13, Mr. Love reported that Funch, Edye & Company, although desirous of working in harmony with the Shipping Board, and presumably with other lines as well, doubted whether it was worth while for them to join conferences, "which hitherto have defeated their own ends, and past experience has taught them" (Funch, Edye & Company) "the futility of expecting satisfactory results." They were willing, however, to "co-operate to greatest possible extent" provided that other lines formed and maintained a rate agreement. In addition to this statement, Norton, Lilly & Company, Funch, Edye & Company and the Isthmian Line had given Mr. Love verbal guarantees that conference rates and conditions would be maintained.

### Mitsui Presents Demand

This proposed arrangement did not satisfy Mitsui & Company, whose representatives said that the Tokyo office had assented to waiving most of the former conditions imposed by Mitsui as a precedent to conference membership last summer, but that Tokyo did insist that all lines, the Isthmian not excepted, must join. After discussion, however, the companies agreed to make their rate agreement provided that Funch, Edye & Company and Norton, Lilly & Company would join within a reasonable time. As to this Funch, Edye & Company indicated a willingness to join if the conference should prove within six months its ability to stabilize rates. Thereupon all lines represented agreed to enter into an agreement covering rates from the Atlantic and Gulf to Japan, China, the Philippines and Singapore on a basis of Funch-Edye and Norton-Lilly co-operation. These companies, added Mr. Love, had agreed not to alter or cut any conference rate without notice of their intention to do so, and Dollar guaranteed complete maintenance of rates. At this second meeting the following were represented: Prince, Houlder, Weir & Boyd, N. Y. K., Barber, Dollar, T. K. K., O. S. K., Suzuki, representing K. K. K. also, Mitsui, Kerr and U. S. S. B.

At the third meeting, held January 17, a schedule of rates to become effective February 1 was adopted, and all lines agreed to file certain statements of machinery contracts. At this meeting the following lines were represented: Prince, Barber, N. Y. K., Houlder, Weir & Boyd, Dollar, Kerr, Suzuki (K. K. K.), Mitsui, T. K. K., also Texas T. & T. and J. H. W. Steele, O. S. K., U. S. S. B.

At the fourth meeting, held January 30, the lines agreed that no quotations should be given on any commodity beyond the end of 1922; that principals of the Gulf lines should issue instructions to their agents to adopt and adhere to the North Atlantic-Far East Conference tariff; that lines should file with Mr. Sinclair of the Shipping Board on the first day of each month a full report of all shipments of the preceding month against all contracts the rates of which are lower than those of the conference. Represented at this meeting were Barber, N. Y. K., Houlder, Weir & Boyd, Dollar, Prince, O. S. K., Kerr, Suzuki, K. K. K., Mitsui, T. K. K., Tampa Interocean Steamship Company, U. S. S. B.

## Troubles of the Pacific

Mr. Love also is attempting to straighten out the tangles of the Pacific Coast. With a view to restoring concord he has arranged to confer with Richard Holt, of the Blue Funnel, a line that has consistently declined to become a member of any Pacific Coast conference and because of that attitude has been a disturbing factor, even though it has abided by its pledge to uphold conference rates so long as all other companies do likewise. If Mr. Love should succeed in persuading the Blue Funnel to join the conference he would have gone far toward restoring harmony and ending rate-cutting; he might, in fact, be able to reorganize the old Pacific Westbound Conference, now split into three groups of San Francisco, Portland and Seattle. At any rate, the China Mail and Dollar Line have agreed to join if all other lines become members, and, inasmuch as the Japanese evince a desire to play the game, the Blue Funnel remains the only obdurate line of importance.

### The Grinding of Axes

Mr. Love's decision to confer with Mr. Holt came at a time when things were getting critical and axes were being ground in the stilly night. The lines plying from Portland to the Far East cut the flour rate from $7 to $6, quite informally, and failed to advise San Francisco that they were violating their own tariffs. When the Java-Pacific heard of the untoward event on the Columbia River it demanded a $6 rate of the California Pacific Westbound Conference, so that it might meet Columbia River competition on the ground. The conference hemmed and hawed and fought for time until the truth or some portion thereof could be ascertained from Portland; but the Java-Pacific declined to wait five minutes, and the rate perforce went in. The incident illustrates the general weakness of Pacific conferences.

But this ultimatum of the Java-Pacific was not the only trouble. When Mr. Love desired the San Francisco office of the Shipping Board to call together the erring brethren, conditions in general were altogether unsatisfactory. There was secret rate-cutting, every man's hand was against his brother, and suspicion stalked abroad by day. In order to put an end to this state of things or to have open and honorable war, the Shipping Board decided to make one last effort. Seemingly it failed when Dollar and the China Mail declined to enter the fold and the Java-Pacific forced its $6 flour rate down the throat of the conference, and a general break was imminent until Mr. Love decided to reason with Mr. Holt.

Mr. Love may succeed. He has proved himself to be a rarely capable negotiator in his conduct of the North Atlantic-Oriental affair. If he does not succeed in restoring harmony and in reorganizing the conference, then the prospects are good for war to the knife and no quarter asked. Such a battle on the Pacific might react on the Atlantic, also, but in view of the small quantity of goods moving to and from the Orient over the transcontinental-Pacific route the newly-reorganized North Atlantic-Far East Conference might be able to hold firm.

Shippers, of course, are with Mr. Love to a man. They do not like low rates.

## Going Down!

Pacific rates continue to weaken generally, and in some cases have fallen to pre-war levels. Some of the more important recent reductions made by the different conferences are:

South American sugar, northbound, reduced from $7 to $6 January 26.

Canned goods moving to Havana, reduced from 90 cents to 74 cents February 10.

Flour consigned to the Orient, reduced from $7 to $6, both rates based on weight, February 9. Rice reduced February 1 from $6 to $5.50. One non-conference line forced the latter cut, and it may have been assisted by rate-cutting within the California Pacific Westbound Conference. Cigarettes were cut from $10 to $8, effective January 20.

In the Australasian trade the Pacific Coast-Australasian Tariff Bureau has reduced gasoline, kerosene, naphtha and distillate from 45 cents to 35 on 500-ton lots to Napier and Timaru. This was done in order to meet North Atlantic competition of 26 and 27 cents a case. In spite of the great differential still existing in favor of the North Atlantic, Pacific operators believe that the Australasian preference for western gasoline will permit freight to move. The rate on gasoline consigned to New Plymouth was stiffened; it remains at 45 cents, but on 500-ton lots, as against the old rate of 45 cents any quantity. Lubricating oil, weight or measurement, consigned to Auckland, Wellington, Melbourne and Sydney has been cut from $8 to $7; goods moving to other ports from $10 to $9. These rates, say steamship operators, are practically at pre-war levels and are the lowest that will be made.

In the intercoastal trade lumber rates have been thrown entirely open. This was done in order to legalize rate-cutting contracts already entered into by all lines with the exception of two. One important steamship company had made a contract to handle lumber at $15, in spite of the conference rate of $18, and much the same course had been pursued by everyone else, with the result that a meeting was held in New York at which a few consciences were unburdened, the conference lumber tariffs, already actually dead, were decently interred, and all steamship representatives shook hands around and returned to their offices to whet an axe for the other fellow. The tariffs were thrown open from February 8. At the middle of the month the ruling rates were $15 for lumber and ties, 70 cents for shingles and 50 cents for laths.

## A European Peace

Peace has been made in the Pacific-European trade, which for several weeks had been the scene of a rate-war of considerable proportions. Although no formal conference has been formed, the lines of the trade have entered into a "gentlemen's agreement" to maintain a new schedule of rates for the season. The East Asiatic did not participate in the meetings that drafted the tariff, but it has advised its competitors that it would abide by the rates, so that no trouble is anticipated from any company.

In general, the new tariff is 10 to 15 per cent below that which obtained prior to October, when the break came. It becomes effective March 1. Thereafter United Kingdom and Continent ports, Bordeaux-Hamburg, will take the same rates. The former used to be higher. The following tables compare the more important rates a hundred pounds:

| | | U.K. | Cont. |
|---|---|---|---|
| | 1922 | 1921 | |
| Beans in bags | 90 | 1.20 | 1.00 |
| Canned goods— | | | |
| Strapped | 65 | .90 | .90 |
| Unstrapped | 80 | 1.05 | 1.05 |
| Dried fruit— | | | |
| Strapped | 80 | 1.25 | 1.15 |
| Unstrapped | 95 | 1.40 | 1.30 |
| In bags | 80 | ........ | .85 |
| Flour | Open | Open | Open |
| Grain | Open | Open | Open |
| Hops | 3.00 | 3.00 | 3.00 |
| Lumber, 1000 B.M. | 90/- | 150/- | 150/- |
| Pearl barley | 90 | 1.00 | 1.00 |
| Rice | .... | .60 | .60 |

The old merchandise rate of $1.50 has not been changed, but that cargo will go, weight or measurement, $30 a ton, instead of weight only.

Commodities not covered in the tariff are subject to individual action; each company, however, is to advise its competitors of rate quotations.

To compare the new tariff with that which obtained during the rate-war is rather difficult, because no one knows just what rates were being quoted by all companies. In the case of canned goods, however, some cargo apparently was accepted at 25 cents, although other lines declined to cut below 35.

This rate-war presented several unusual features, most unusual of which was the fact that it broke out at a time when cargo offerings were not particularly small. The source of this paradoxical situation is to be found largely in the entrance of several lines into the trade within a few weeks; the newcomers, lacking the prestige that the older companies had, cut rates in order to attract cargo; and one by one the older lines were compelled to follow suit, with the result that rates tumbled daily. This situation was not altogether to the liking of shippers, who, however much they doted on rate-cutting, were unable to count on any rate from one day to the next, and consequently were chary about making c. i. f. quotations.

## European Trade of 1921

The Panama Canal Record summarizes the trade between the Pacific Coast and the Atlantic and Europe during 1921 as follows:

The most conspicuous feature of the traffic history of the Panama Canal during the calendar year 1921 was the rapid expansion of the trade between Pacific North America, especially the Western United States, and the Atlantic Coast of North America and Europe. A number of new steamship lines began during the year to compete for this West Coast business, and the volume of cargo handled has increased from month to month. Lumber has contributed no small share to the total.

In 1920 lumber shipments through the canal from Pacific to Atlantic totaled 205,172 tons. In 1921 this total increased to 448,087 tons, a growth of 118 per cent. The United States furnished the bulk of these shipments, 387,993 tons, and Western Canada 57,429 tons. There were small shipments of lumber from Central and South America, Australasia, and the Far East.

The countries of destination were: East Coast of the United States, 346,249 tons; British Isles, 60,048 tons; other Europe, 11,895 tons; with lesser tonnage to the East Coast of Canada, the West Indies and the East Coast of Mexico.

The shipments of lumber to the

British Isles and Europe were heaviest during the first six months of the calendar year, and declined very noticeably thereafter. Shipments to the East Coast of the United States, however, show a steady increase. These coast-to-coast shipments of lumber that were formerly handled by rail were stimulated by the increase of railroad freight rates.

The trade was handicapped at first by the lack of adequate terminals equipped to handle lumber on the Atlantic seaboard, but it is reported that this has been remedied.

## Page Freight Report

San Francisco, February 24, 1922.

Since our last report, dated January 25, freight rates on grain have advanced to 40/- for the U. K. and usual Continental range ports, with space well engaged by the regular lines through March, and April space commanding the same rate. The first full cargo fixture for this year for the U. K. was made by Kerr, Gifford & Company, by the British steamer Largo Law, for wheat from Portland at 40/-, which was closely followed by the closing of a Japanese steamer from Portland by Northern Grain Warehouse Company at 45/- for Limerick, done it is reported, to cover a sale necessitatng March shipment, and therefore not to be considered as establishing a rate. The significant thing is that rates on grain have now reached a point high enough to attract tramp tonnage.

Aside from some eight or nine steamers taken for lumber from North Pacific ports to Japan at rates ranging from $14 per M feet to $14.25, there has not been any activity in lumber chartering for foreign ports. The motorship Theodore Roosevelt was taken on government form of time charter by the Australian Despatch Line for delivery this coast and redelivery Australia. She will load lumber. The rate on this fixture has not as yet been reported. The schooner John A. Campbell for Sydney for lumber from Coos Bay, chartered by Balfour, Guthrie & Company, on private terms. Schooner Edward R. West for lumber for one port South Africa at $22.50, was chartered by G. W. Gates & Company, and the schooner Elinor H. was chartered by the British Columbia Mills Timber & Trading Company, for the same business at the same rate. Robert Dollar Company will load their ship James Dollar for Japan with lumber, and also the William Dollar for Shanghai, both for their account.

The steamer Sydic is chartered for coal by J. J. Moore & Company, from Cardiff to this port at 15/- per ton, and the same charterers have taken the steamer Hollywood for the same business from Newcastle at $3 per ton. Swenson, Hibberd & Company have taken the motorship Mazatlan on bare boat form of time charter for a period of six to eight months to engage in the Siberian fur trade.

Steamer Miramar is chartered by Balfour, Guthrie & Company to load nitrate from Chile to Honolulu at $5.50 per ton.

Pacific American Fisheries Company has engaged steamer Santa Inez for two round trips to Alaska, the rate not being reported.

For lumber for the Atlantic seaboard the steamer Princess has been taken by Burton-Beebe Lumber Company at $16 per M feet, and steamer Delco for the same business by the same charterers, terms private. Also for the same business steamers Munaires and Munindes by Chas. R. McCormick & Company; and the Willapa Lumber Company will load for the same destination, steamers Mystic and Nevada. No rates have as yet been reported on these fixtures.

The United States Shipping Board steamers Cathay, Oriental, Celestial and Mandarin have been purchased by Robert Dollar Company, but the prices paid are not given out. Ship Chillicothe has been bought by the Columbia River Packers' Association at a reported rate of $35,000, and ship Edward by Alaska Packers' Association on private terms. Schooner Sequoia has been sold to F. A. Watson of Los Angeles at the reported price of $10,000, and the motorship Mount Baker to Frank B. Petersen on private terms. Steamer Santa Flavia is sold to James Brownfield at a reported price of $35,000.

PAGE BROTHERS, Brokers.

## Beyfuss Freight Report

San Francisco, February 27, 1922.

We wrote our previous report under date of January 26, since when the market in several directions has shown a decided improvement. There are many more inquiries and much more business in full cargoes has been done than in the previous month, although in spite of this freight rates have not advanced except in the movement of cargoes from this coast to Europe.

Grain to Europe: Parcel rates have steadily advanced and we now have to report the chartering of two steamers and several large parcels which are practically the equivalent of steamer loads. Rates are ruling strong at 40/- and 26/6.

Lumber to the Orient has come back so far as volume is concerned, and four or five fixtures are reported with rates ruling strong at $14.25.

The time charter market has been quiet, only one vessel having been taken for a voyage to Australia, delivery North Pacific, re-delivery at destination, reported at 6/-.

For South Africa a sailing vessel has been fixed at $22.50.

Lumber to Australia has been very quiet and rates are, nominally, $14 steamer shipment.

Although several inquiries have been in the market for lumber to West Coast of South America and sailing vessels have offered at $17, no transactions are reported. The steamer rate is weak at $18.

A full cargo of nitrate is coming this way in a foreign steamer, but the rate has not been disclosed. However, it is rumored that $5 is not far from correct.

Early in the month the intercoastal lumber conference was broken and promptly three or four steamers were reported closed and rates are now quoted nominally at $14, although it is hinted that even less than this has been done.

Rather unusual movements are two cargoes of merchandise in sailing vessels from Atlantic and Gulf ports to this coast via Panama Canal. Terms private.

C. BEYFUSS CO., Brokers.

## Deaths

**Charles T. Bryant,** shipping and business man, in Seattle February 1.

**Robert B. Huie,** formerly general manager of W. R. Grace & Company, in Palo Alto, California, February 1.

**Albert C. Ashton,** treasurer of the Ashton Valve Company, in St. Petersburgh, Florida, January 31.

**Captain J. J. Bennett,** a well-known Pacific Coast mariner, in Oakland, California, February 18.

# About People

**J. P. Sutherland,** recently of the passenger and mail section, Shipping Board, and formerly of Thomas Cook & Sons, New York, has been placed in charge of the Pacific Mail's new office at 10 Hanover Square, New York City.

**Edward McConalogue,** former Portland manager of the General Steamship Corporation, is now vice-president and general manager of the Northwest Shipping Company. F. L. Fairbanks is traffic manager and William H. Lyng is president. Captain Walter Meyers is marine superintendent.

**Captain J. W. Jory,** formerly of the Matson service and more recently in charge of Shipping Board recruiting, San Francisco, has been appointed assistant surveyor of the Board of Marine Underwriters, San Francisco.

**R. L. Dyer,** assistant district manager, construction division, Shipping Board, Seattle, has resigned, his work having been completed.

**F. S. Durie** has succeeded E. M. Hunter as general agent of the Pacific Mail in Los Angeles.

**Captain L. A. Walters,** master of the Shipping Board freighter West Faralon, has opened an office in Los Angeles as marine surveyor and appraiser.

**W. B. Beebe,** formerly assistant manager of the Shipping Board's construction division, Seattle, has joined the London office of the board.

**George Powell,** president of the Oregon Pacific Company, was elected president of the Waterfront Employers' Union of Portland at the annual meeting. Other officers are: Henry Rothschild, vice-president; O. S. Swenson, secretary-treasurer; P. E. MacDonald, G. B. Gilkey and C. R. Albers, directors.

**E. J. A. Watts** has succeeded the late M. J. Mayfield as secretary of the California Pacific Westbound Conference. Mr. Watts formerly was San Francisco manager of the Ph. Van Ommeren Corporation of New York.

**George Dempsey,** formerly manager of Frame, Leaycraft & Company, San Francisco, has organized the Union Mercantile Company, with offices in the Newhall Building, San Francisco, to specialize in trade with the Orient and Australia.

When the Chinese cooks of the T. K. K. steamship Taiyo Maru struck at Hongkong recently, Al Evans, the chief steward, carried on their work single-handed until the vessel arrived at Yokohama and Japanese cooks could be shipped. The photograph indicates that Mr. Evans came through nobly. He did, however, regret that Ah Yow, who had been his room-boy for eighteen years, walked out with the other Chinese.

**Joseph W. Powell,** who has been acting as president of the Emergency Fleet Corporation, will sever his connection with that corporation and the Shipping Board on March 4, says an announcement by the board. Mr. Powell went to the board September 4, 1921, at the insistent request of the President and Chairman Lasker, to aid in expediting the reorganization of the fleet corporation. Mr. Powell made it plain at that time that his private affairs forbade his giving the time necessary for permanent connection with the enterprise. He finally consented to come for three months without salary. So much of the reorganization work was in progress at the end of the ninety days that Mr. Powell felt it his duty to extend the period of voluntary service. March 4 will conclude six months of Mr. Powell's stay, and both Mr. Powell and Mr. Lasker feel that by that time the work of reorganization will be so well in hand that Mr. Powell will be free to carry out his expressed agreement of short service on which he came with the board. There will be no other changes in the Emergency Fleet Corporation trustees; none is contemplated. After Mr. Powell leaves, the work he has had in hand will automatically pass back to Chairman Lasker. Mr. Smull, senior vice-president of the Emergency Fleet Corporation, will act as presiding officer of the Emergency Fleet Corporation board.

**R. J. Ringwood** of San Francisco has resigned as manager of the operating department of the Emergency Fleet Corporation, effective February 15. Mr. Ringwood has held the position of manager of the operating department since August 3, 1921. Mr. Ringwood stated that he left under pleasant conditions, said a statement of the board, but that he could not afford to remain in Washington, under present conditions of cost of living, at the salary he received. He said that after a rest of several weeks he would re-engage in steamship activities, but that he had no definite plans for the future.

**Nathan A. Smyth** has been named as general counsel of the Emergency Fleet Corporation, says an announcement by Elmer Schlesinger, general counsel, United States Shipping Board. Mr. Smyth has held the post of assistant general counsel of the fleet corporation and of the board since July 14, 1921. The promotion is made to further perfect the legal organization of the board and of the fleet corporation and to make it run more efficiently and more smoothly, and also is in recognition of the very valuable services rendered by Mr. Smyth. Mr. Schlesinger will continue as general counsel of the Shipping Board, but the promotion of Mr. Smyth will bring about distictively a segregation of the legal work of the board from that of the fleet corporation, in line with the delegation of operating functions which heretofore has been made to the Emergency Fleet Corporation. The selection of Mr. Smyth as general counsel of the fleet corporation is at the suggestion of Mr. Schlesinger. A resolution carrying out the suggestion was adopted by the board of trustees of the Emergency Fleet Corporation February 10. Mr. Smyth before becoming assistant general counsel last July was associated with the law firm of Rushmore, Bisbee & Stern in New York City. He was born at Quincy, Illinois, in 1876. He was graduated from Yale in 1897 and from the Yale Law School in 1900. His home is at Englewood, New Jersey. Mr. Smyth takes charge at once of the legal work of the fleet corporation.

**M. A. Perry,** Shipping Board engineer in charge of the construction of four vessels at the Kiangnan yard, Shanghai, has returned to the United States. Mr. Perry had been in Japan and China three years, at first under J. A. McGregor at Yokohama and lately in full charge at Shanghai.

**Leland S. Howell** is chief of the Sea Service Bureau, Shipping Board, San Francisco, succeeding Captain J. W. Jory, resigned.

***Read on this page, from issue to issue, a description of the features which have made Prest-O-Lite a national institution***

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# A NOTABLE MARINE RAILWAY

## D. J. Hanlon Adds to the Repair Equipment of Oakland's Inner Harbor One of the Largest Roller Docks in the World

AT the Hanlon Drydock & Shipbuilding Company's yard on the Oakland estuary there has just been completed one of the finest and largest marine railways in the United States, and so far as our information is concerned, in the world. For the benefit of those of our readers who are not familiar with the docking of ships let us say that docks are of three types: the graving dock, the floating dock, and the marine railway.

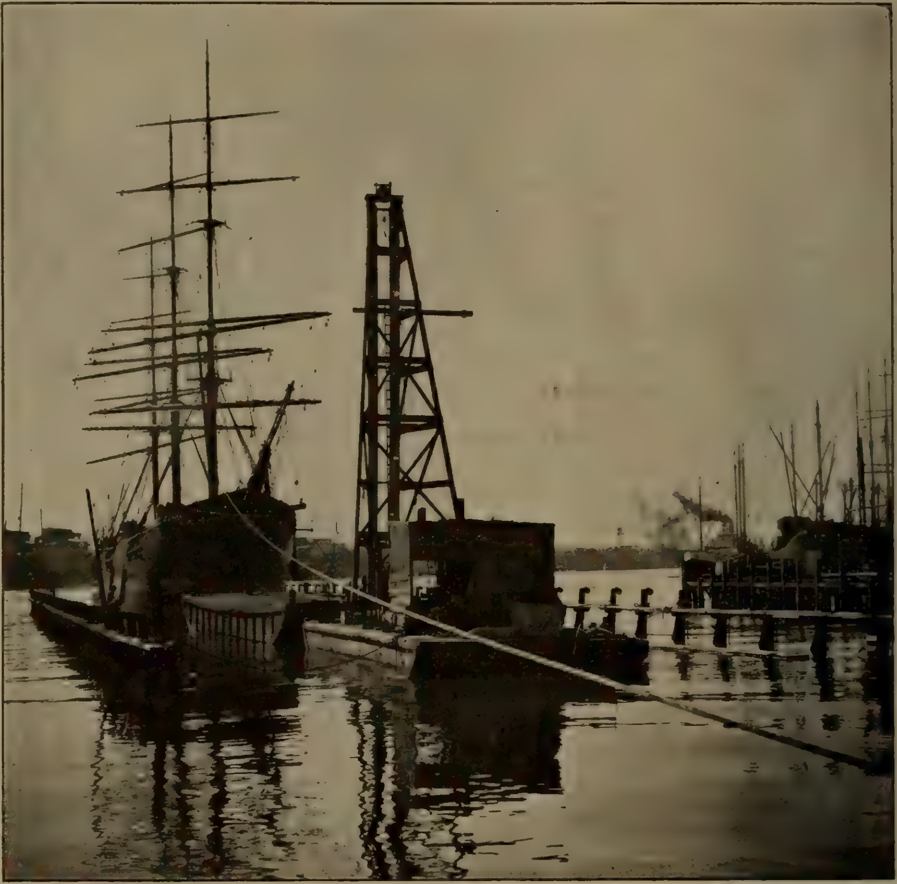
A graving dock is a basin with gates, into which a ship is floated, the gates closed and the water pumped out.

A floating dock is a structure which can be sunk by the admission of water, the ship then being floated over the dock, which raises, bringing the ship with it when the water is pumped out of its tanks.

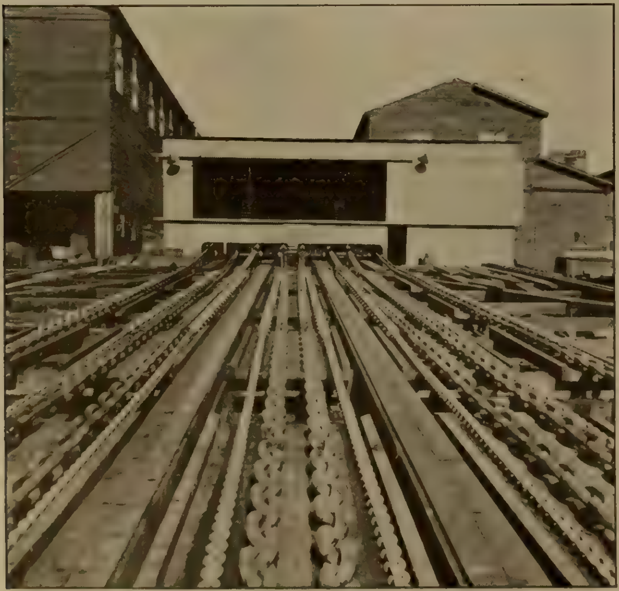
The marine railway is a cradle mounted on rails in such a way that it can be drawn into the water. The ship is then floated on and fastened to the cradle, which is drawn out, bringing the ship with it.

The marine railway has reached its greatest development in and around San Francisco Bay, and the example under discussion in the present article is the very latest and highest development of the type. It was designed by Leland S. Rosener, consulting engineer of San Francisco, who is responsible for the majority of the larger marine railways of the United States and embodies in its construction not only the experience and engineering ability of its designer but also not a few of the personal ideas and "safety first" maxims of D. J. Hanlon.

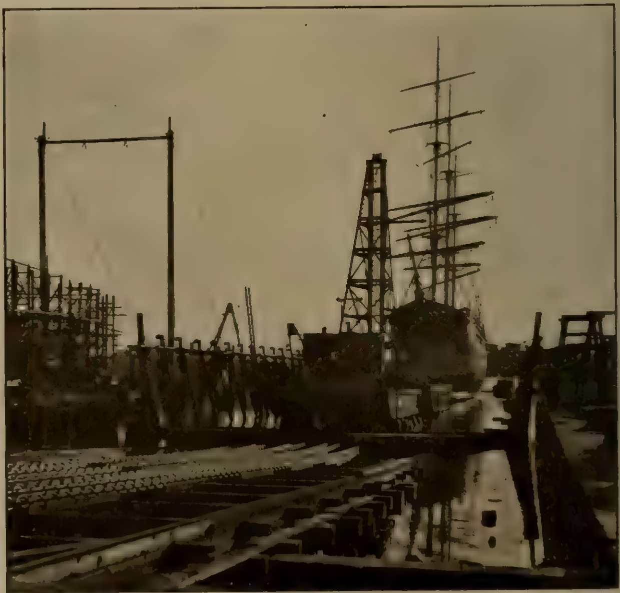
The capacity specifications originally laid down for this dock called for its being able to haul out easily the largest steel hull likely to come up the Oakland estuary. This led to the design of a cradle of sufficient length and breadth on foundations of sufficient stability and with hauling-out gear of sufficient strength to handle easily a 10,000-ton tanker or a 12,000-ton freighter.



View of the dock arising out of the water with the Alaska Packers' ship Santa Clara and two barges. This load was pulled out on high



View looking up the tracks at the power house, showing arrangement of chains



View of dock with Santa Clara and barges entirely clear of the water

# The Whole Engine Room

All the important units of a motorship engine room can now be purchased from one manufacturer.—The Worthington Pump and Machinery Corporation.

Main and auxiliary engines, pumps and compressors, all are made by one concern, all can be bought under one contract and responsibility.

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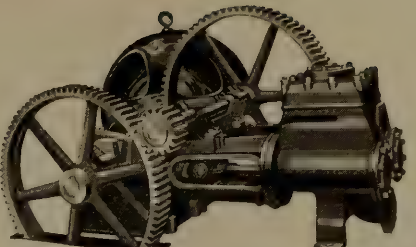
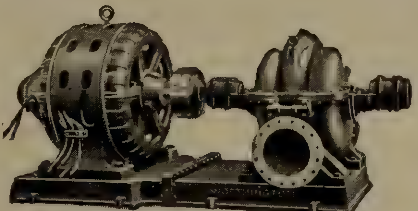


HORIZONTAL PISTON POWER PUMP

General duty power pump such as used for oil transfer, bilge pumping, etc. Gear guards have been removed to show more clearly the gear arrangement.



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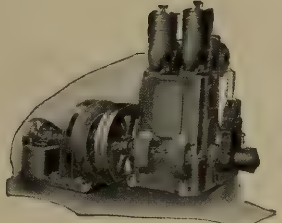

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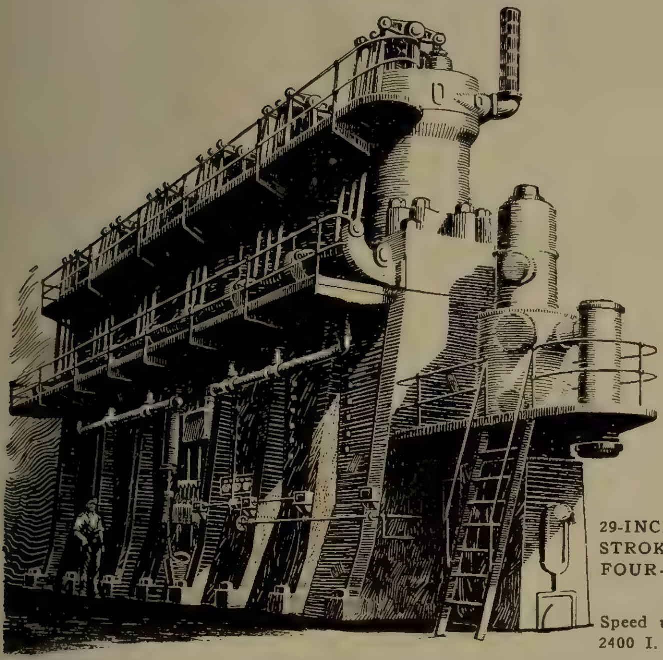
Two-cycle Diesel engine solid injection type, direct connected to alternating current generator for auxiliary power and lighting.



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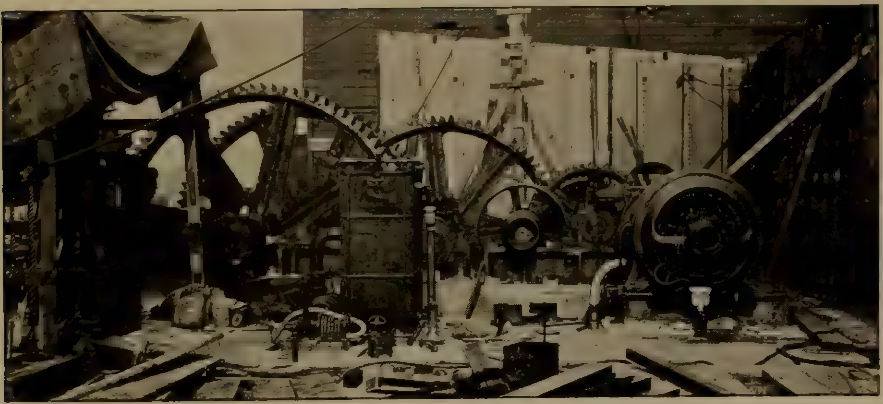


View of driving motor, gear train and brakes taken while power house was under construction

This fixed the length of the cradle at 438 feet with a railway length of 792 feet. The draft on keel blocks at the outside position of the cradle is 17 feet 6 inches at the forward end and 22 feet 6 inches at the after end. In order that readers may get a proper comparative idea of the size of this marine railway, we refer them to the United States official table of privately owned docks opposite page 176 in this issue of Pacific Marine Review.

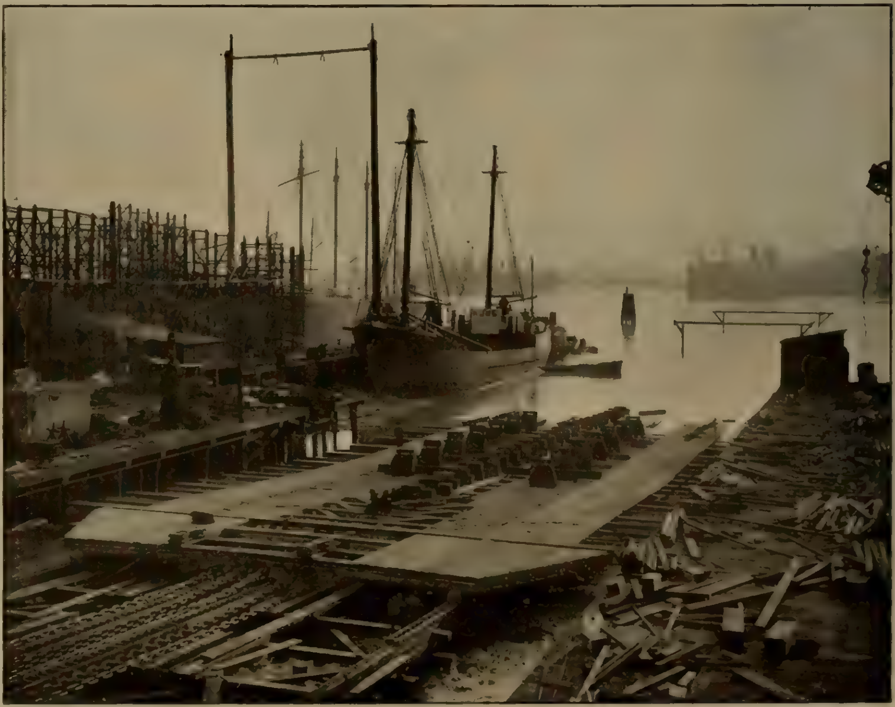
The cradle travels on four lines of live rollers supported on four tracks. These live rollers are the heart of the marine railway construction. They are of 4½ inches diameter with a 12-inch face and are made of dense cast iron. They are poured on end, the molds being prepared with special care to produce a circular cross section so that the rollers will run practically true without machining. These rollers are all inspected with great care and many rejections made. Both on account of resistance to wear and to corrosion it is highly desirable to have the hard, unmachined surface exposed. Slippage on these lines of live rollers is very slight, and it is estimated that it will take the forward roller on each line about four years under ordinary usage to reach the outer end of the stationary track. This construction with live rollers minimizes friction and makes possible the hauling out of tremendous weights with comparatively small power.

Eight lines of chain are used in hauling the cradle. These chains are actuated by eight sprockets on the main shaft of the drive and are attached to the cradle through four sprocket sheaves. The slack of the chains is taken up by the motion of the cradle itself through a simple mechanical device.

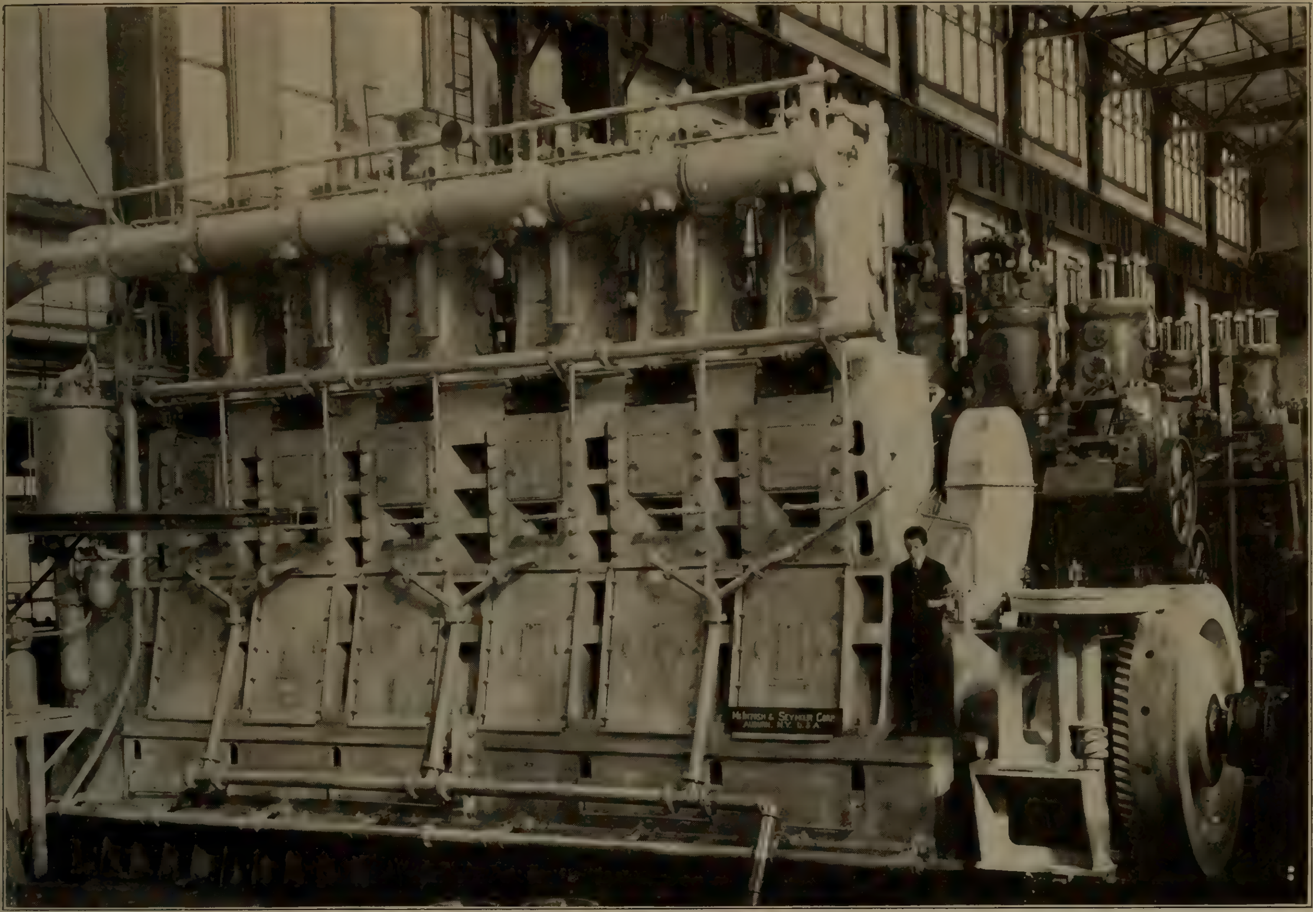
Great care was exercised in the inspection and choice of chains, which have to conform to very rigid tests for strength and for gauge. The chains for the new dock were supplied by Bradley & Company of Philadelphia through their San Francisco representative, Mr. C. W. Maydwell.

The shafts, gears, pinions, bearings and brakes of the driving mechanism have been designed with ample factors of safety and with most complete provisions for proper lubrication. As will be seen from the pictures, the gears are of rather unusual dimensions. They are cast steel of a special quality throughout, and the motor pinion and first train gears have machined teeth. These cast steel gears were supplied by the Columbia Steel Company, and on the large gears they certainly show a very beautiful job of tooth molding, meshing perfectly with their pinions. A 600 horsepower motor furnishes the energy, pulling the huge cradle out on high speed at 28 feet per minute, or with heavier loads about 16 feet per minute on low.

With this new marine railway and their well-equipped machine shop and experienced organization, the Hanlon Drydock & Shipbuilding Company are in very good position to furnish all types and sizes of ships with prompt and effective service in maintenance, repair, or reconditioning work. A completely equipped salvage boat, one of the finest on the Pacific Coast, is kept ready at all times for wrecking work or emergency repairs under the able management of Captain Curtis, while the tug, Mary L. Hanlon, is available for San Francisco Bay work.



View of the cradle of the unfinished dock; Mary Hanlon at outfitting wharf. The dock was used in this condition for hauling out the Mary Hanlon for repairs to her sternpost and rudder



The above picture shows one of our 1200 I. H. P. Directly Reversible Marine Engines on the test floor. A pair of these engines have been installed on the M/S "KENNECOTT."

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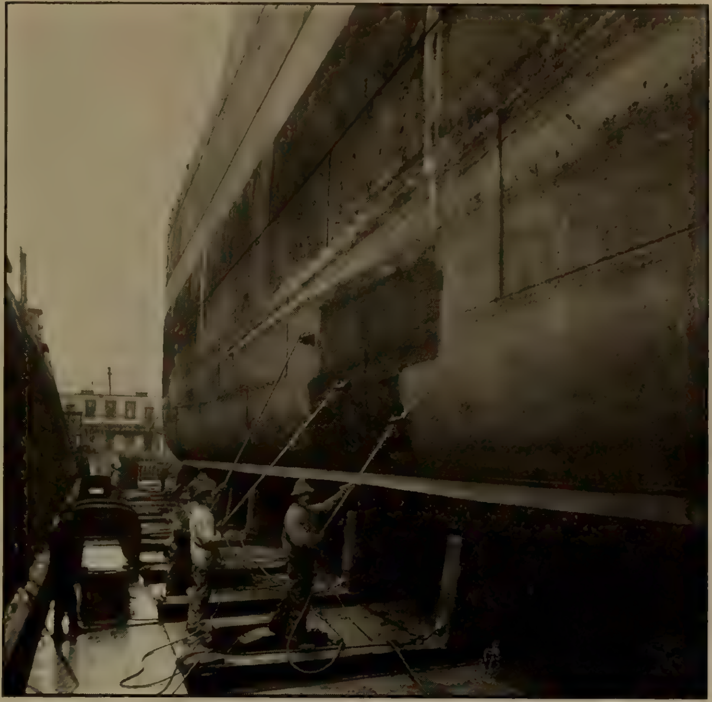
# SCRAPING SHIPS BY MACHINERY



Cleaning the International Mercantile Marine steamship Montana with Holzapfel pneumatic scraper

FOR many years people have spoken about using machinery for cleaning the bottoms of ships. The first ideas in this connection were for the purpose of cleaning ships afloat, when they were covered with a heavy growth of barnacles, in order that they might be able to reduce the loss of speed resulting from a foul bottom during a homeward voyage from ports where drydock accommodation was not available. A good many patents were taken out to accomplish this. From time to time others also sought to apply some such method to the cleaning of ships in drydocks, in order to supersede hand labor.

While there is relatively little economy in the cost of labor to be anticipated from the substitution of mechanical cleaning of ships' bottoms by machinery as compared to hand labor, still the efficiency and the excellent work to be accomplished by machinery is so much greater than the efficiency of hand labor that the idea has interested various minds.

Not long ago a steel brush, consisting of a disk, to the flat surface of which steel wires were attached, was tried by the Electric Scaling Company of New York, of which Captain Sampson of the Oriental Steamship Company was president. This brush, however, got clogged up with grass and was not developed into a practical working proposition. Other methods having the same purpose have been patented, but, so far as can be ascertained, none have been in practical use except a brush recently introduced by the Messrs. Holzapfel, father and son, of the International Compositions Company, Inc., 23 Park Place, New York.

About a year ago Mr. Holzapfel, Sr., conceived the idea of using a cylindrical brush for this purpose, relying on the centrifugal movement of this brush to throw off any grass or other matter likely to clog this brush, and he requested his son Arthur, who is an engineer by profession, to work out the details of this brush. After many experiments a cylindrical brush about 11 inches wide and 5½ inches outside diameter, having an aluminum cylinder and very strong steel wires, proved successful. This brush is driven by a pneumatic engine of suitable power, running about 5000 revolutions, reduced by transmission to about 1600. It removes barnacles up to an inch diameter perfectly, taking not only the shell itself but also the base; cleans off all grass completely, a thing which is rarely done by hand-scraping; and removes all rust and loose paint, creating a perfectly smooth surface vastly different from the surface left by the usual hand-scraping methods, which have never been quite satisfactory to the intelligent ship master or marine superintendent.

The chief merit of the brush, therefore, lies in the thorough workmanship which it performs, and in the creating of a much smoother surface on the ships' bottoms than can be obtained by the usual hand-scraping methods. It goes without saying that when the new paint is applied over a perfectly smooth surface, the surface obtained by the new coat or coats of paint will also be perfectly smooth, resulting in a reduction of surface friction and an increase of speed.

We understand a new motor has been designed by Mr. Holzapfel, Jr., and that brushes attached to this will probably be able to clean ships when required to the bare iron; that is, they will be a substitute for the usual scaling hammers, in which case the cost of scaling will no doubt be very materially reduced.

Our illustration shows the cleaning of the bottom of the steamship Montana of the International Mercantile Marine Company. The side of this ship was covered with grass, which was very completely removed by the brushes.

Some twenty or thirty steamers have been cleaned by means of Messrs. Holzapfel's brushes, and additional units are being prepared for increasing the amount of work to be done.

Patents have been applied for by the inventors, who also hope to utilize the brushes for cleaning buildings at a reduction in cost as compared with the sand-blast.

It may be mentioned that the tubes on which the brushes are mounted run up to a length of 25 feet and that therefore a complete cleaning to a height of 25 or 26 feet can be accomplished without the use of any staging. Wherever the brush touches, all fouling matter, loose paint and scale are removed.

The cargo motorship Fordonian. This vessel was the first freighter to be equipped with Diesel electric drive; Ansaldo Diesel engines and General Electric generators and motors

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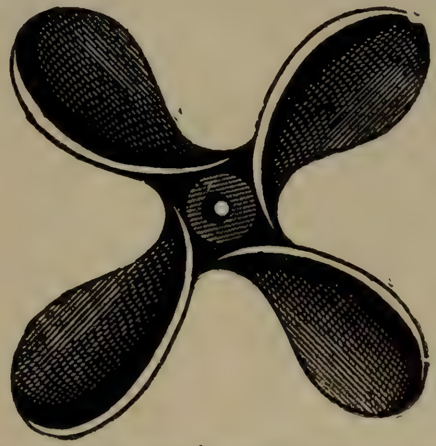

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# Electric Steam Generator

An electric steam generator, utilizing the principle of heating produced by resistance to flow of electric current through water, has recently been placed on the market by the Electric Furnace Construction Company, Philadelphia. It is called the "Electro" steam generator.

Steam is generated at any specific pressure by means of high tension alternating current led directly through electrodes of special design into the water to be evaporated. A vertical tank is used, constructed according to approved boiler practice. The whole apparatus occupies only a fraction of the space required for fuel fired boilers and the cost of installation is very much less.

The amount of steam generated, the pressure and the amount of electric power used are governed by the height of water in the vertical tank. This is controlled and regulated by standard valves, rendering the whole operation practically automatic.

Any water that is suitable for the ordinary boiler is satisfactory and it is not necessary to install water softening apparatus. Either cendensate or raw water can be used or a mixture of the two. No part of the "Electro" steam generator is exposed to a higher temperature than that of the steam and the only part subject to slight wear is the electrodes, which may be replaced annually at a nominal cost.

There is no scaling or erosion of tubes or shell due to high temperatures.

The most important application of the "Electro" steam generator will be found in industries located within the range of hydro-electric power plants, where use may be made of surplus energy or water running to waste. Due to the inability of ordinary power consumers to operate 24 hours per day, the load factor at most power plants runs from 60 to 80 per cent. Complete use may be made of this off-peak load, which is not now used, by the installation of the "Electro" steam generator, and the load factor of the power station can be considerably improved. The generators operate with 98 per cent thermal efficiency and unity power factor. The "Electro" generator is very flexible, and it can be paralleled in with existing coal or oil-fired boilers and just operated on these off-peak loads, when cheap power can be had.

Wherever fuel is expensive and power can be had at cheap rates, the "Electro" steam generator is economical. This condition applies particularly to industries like paper, pulp and chemical, lumber, textiles, etc.

Many concerns contract for blocks of electric power at a fixed rate per horsepower year. Very few of these use this continuously and during idle periods the energy which they pay for can be converted into steam for heating or industrial purposes.

The chief advantages claimed for the "Electro" steam generator are that the initial and operating costs are very much lower than on fuel-fired boilers; the space occupied is much less, there are no expensive buildings, smoke stacks, storage for oil or coal, no fuel or ash handling equipment; no mechanical stoking devices or water softeners.

Renewals, repairs, cleaning and shutdowns are reduced to a minimum as the highest temperature is that of the steam.

A number of large generators have been in successful operation for some months and already over 100,000 kilowatts of generators of this type, representing 10,000 boiler horsepower, are running or being installed.

Ship Repairs by Experts

Builders of Seventeen steel vessels, including their engines, windlasses and condensers.

GENERAL MARINE REPAIR WORK

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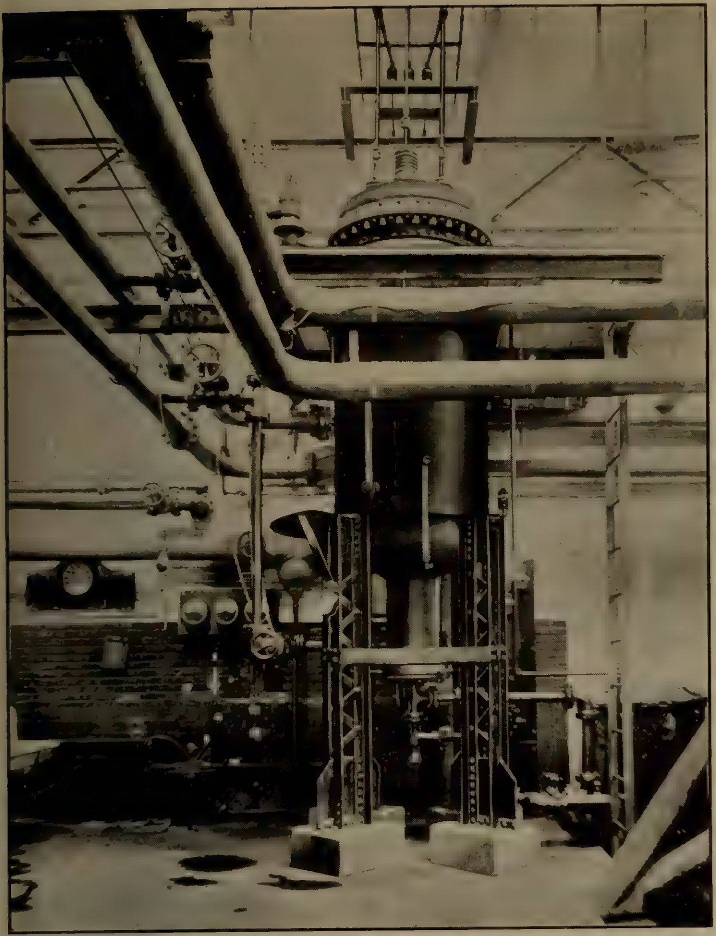

View in the power house of the Wayagamac Pulp & Paper Company, showing the "Electro" steam generator installed by the Electric Furnace Construction Company, Philadelphia

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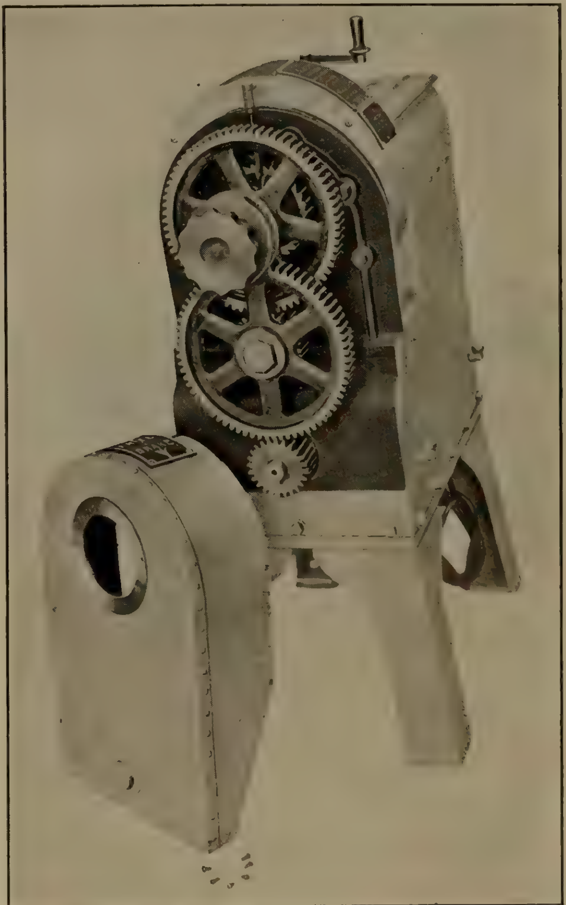
# Lietz Rotary Brake Sounding Machine

ONE of the latest developments in electrically driven appliances for marine service is the Lietz rotary brake sounding machine, which consists of a mechanical sounding device driven by a General Electric Company one-horsepower motor. By means of the apparatus, soundings can be taken to any depth up to 100 fathoms without decreasing the speed of the vessel or loosing the lead and wire.

The outstanding feature of the machine, which is an improved type of a former design, is the brake action. This has been much simplified. The brake mechanism is of new design, and consists of a mounted shaft having a hollow portion on which the reel revolves. The brake clutch is rigidly mounted and is operated through the hollow portion of the shaft by means of a screw. This screw, engaging with the rolling members in the hollow portion of the shaft, causes expansion and contraction of the brake clutch, which rotates with the reel and shaft while winding in.

The brake mechanism is actuated by a brake wheel on the outside of the casing and acts on the reel, gradually, preventing its stopping suddenly with the consequent loss of the wire and lead. There is an indicator on the case near the brake wheel which shows which way to turn it to free the reel and let out the wire, or to brake the reel for winding.

Although normally designed for operation by one horse power motor, the device is arranged so that it can be operated manually if desired. In this case, disconnecting the motor from the gearing is unnecessary, as the motor armature acts as a flywheel. The outfit is so constructed that all parts are easily accessible for inspection or repairs.



Leitz Rotary Brake Sounding Machine, driven by 1-H. P. General Electric motor

# C-O ENGINES IN PACIFIC COAST BOATS

FISHERMEN and other work boat owners of the Pacific Coast are showing an increasing interest in fitting their boats with engines to burn crude oil and the heavier distillates. Among the various engines that have come into favor recently through the working out of this interest on the part of boat owners, the Fairbanks-Morse line of C-O motors are well in the front rank.

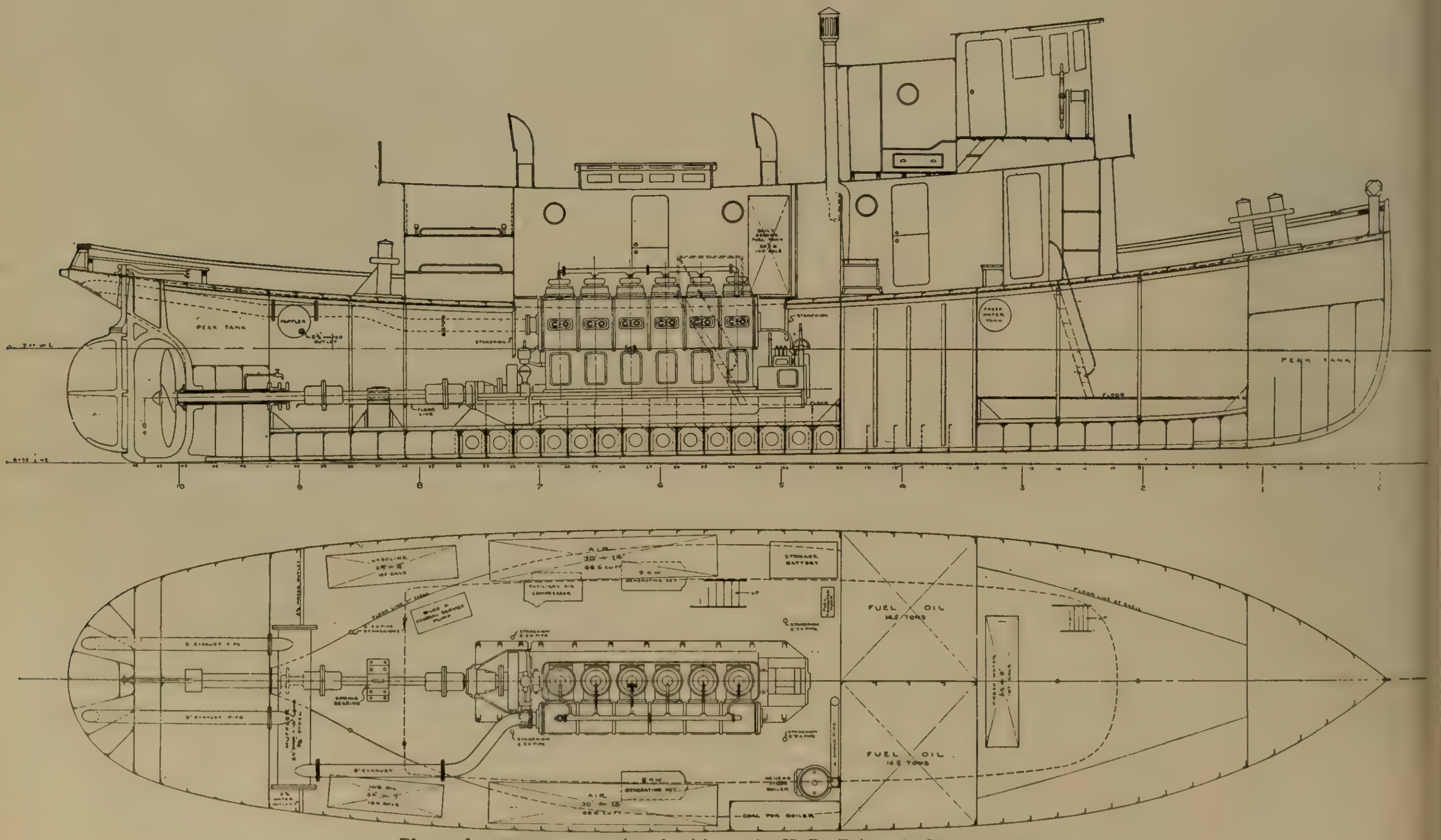
Perhaps the most interesting installation of these engines is that on the converted subchaser Corona. This boat is owned by Frank E. Davis of San Diego and used by him as a lobster carrier serving the many lobster camps along the coast of lower California and bringing their catch into San Diego to be distributed to American markets.

Pacific Creosoting Company's tug Creosote; 56 feet long, 16 feet beam, 6 feet 7 inches molded depth, powered with a 100 H. P. C-O Engine

The original power plant of the Corona was removed by the Liberty Drydock & Repair Company of Brooklyn and two 100 H. P. C-O Fairbanks-Morse engines substituted therefor. The central screw and line shaft were removed, and with propellers designed to take the lower power at slower speed the new plant drives the boat handily at a normal speed of about 13.5 knots an hour, with reserve power sufficient to get a maximum of 15 knots. These new propellers are of 39-inch diameter and 58-inch pitch, 3-bladed, and at maximum speed turn 340 revolutions per minute.

The Corona has a length over-all of 110 feet, a beam of 14 feet 8¾ inches over planking, a draft of 5 feet 4 inches, a light displacement of 65 tons, and a carrying capacity of about 14 tons. She is a very good sea-boat, and on her long trip from New York to San Diego made a very good engine performance record. Working on 28 degrees Baume oil, the consumption was about 16 gallons per hour, which is equivalent to 0.60 pounds per brake horsepower. The original fuel tanks were retained, giving eight tons fuel capacity, sufficient for about 2000 miles at 15 knots.

Another Puget Sound C-O equipped tug, the Equator, has recently aroused considerable interest along the Seattle waterfront through a race with the steam tug Oregon. Both tugs belong to the Cary-Davis Tug & Barge Company. After a towing job they met at Port Townsend and started a race home to Seattle. Just outside the former harbor a strong head on gale was encountered, and the two boats bucked into it straight across the Sound, arriving in Seattle in less than four hours, with the Equator 200 yards in the lead, although the Oregon had the advantage at the start by about 100 yards. This test was looked upon by the wise men of the waterfront as a struggle between new and old ideas, and the fact that the new won out will go far toward removing the prejudices against Diesel type engines that still linger in the minds of many of the old steam engineers.



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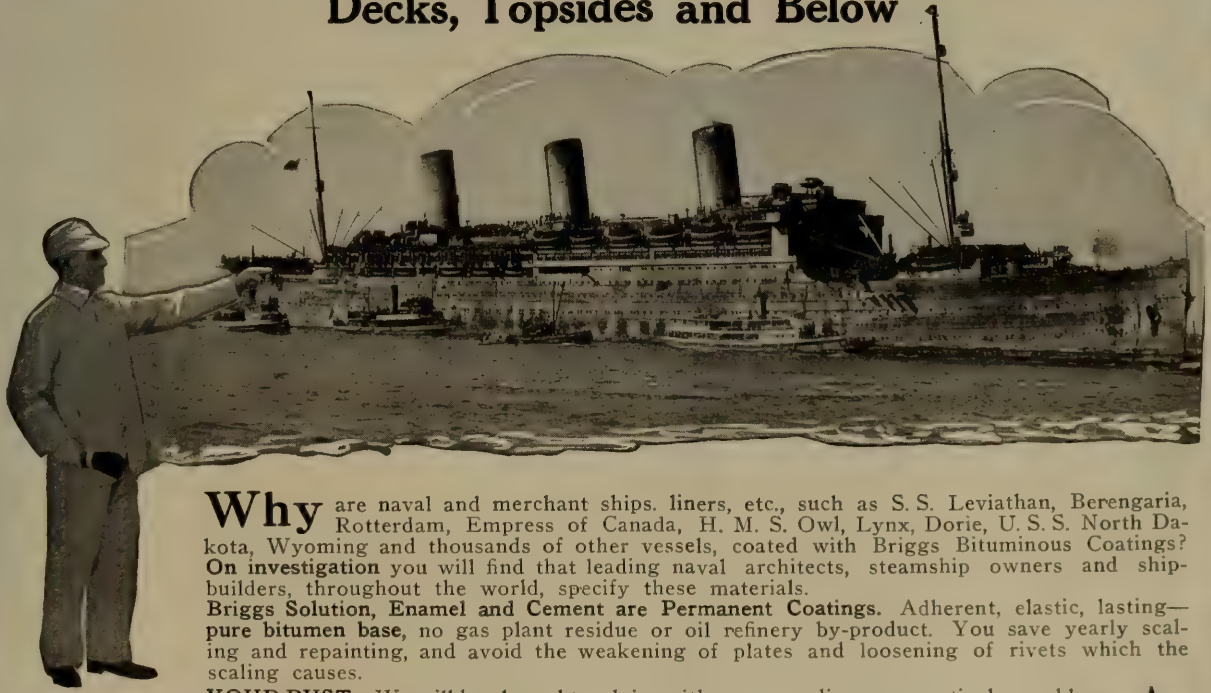

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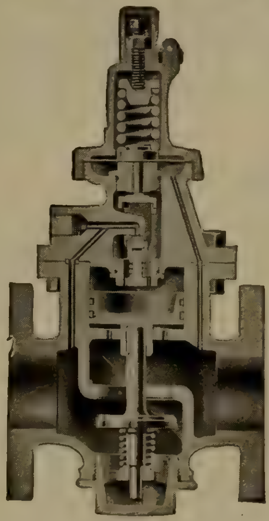

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# Strange Tale of an Old Clipper

An American clipper of the early '50's

On July 27, 1850, the American ship Nonantum of Boston, Captain Bates, sailed from Baltimore for San Francisco with 1050 tons of coal in her lower hold and with 'tween decks filled with provisions for the steamers of the P. M. S. S. Co., plying between San Francisco and Panama. Had good weather until off the River Plate, when encountered a severe pampero, on the second day of which smoke was discovered in the 'tween decks and the coal cargo found to be on fire. Several of the crew were rendered senseless while getting out provisions and water, after which the hatches were all closed and caulked and a course laid for the Falkland Islands, 800 miles distant. The cabin becoming too full of gas for habitation, Mrs. Bates was for five days and nights in a chair lashed to the deck, often drenched with water and spray, as the gale still continued. On the twelfth day after the discovery of the fire, the Falklands were made out, the ship having in the meantime become hotter and hotter, with gas and smoke escaping at every seam and all hands in fear of an explosion from confined gas. On getting into the bay, the ship was beached and scuttled. It was found that beams and stanchions had burned off and the ship had bilged. She was condemned and sold.

About a month after the arrival of the Nonantum, there put into Port Stanley for fresh water and beef the British ship Humayoon, Captain McKenzie, from Dundee for Valparaiso, with coal, tar, liquors, etc. Captain McKenzie was the owner of both ship and cargo and spent some time on the island in recreation, hunting, etc. He finally sailed in the Humayoon on November 25, with Captain and Mrs. Bates as invited guests. The day after passing Cape Horn they had a heavy gale and found the ship on fire. Flames darted through the hatch when the crew were vainly endeavoring to caulk it and shot upward to the mast head. The longboat was launched, but no provisions could be got at. Soon "Sail ho" was cried and the party was picked up by the British ship Symmetry of Liverpool, Captain Thompson, bound to Acapulco with coal. The Symmetry stood by until the masts of the Humayoon fell and she was only a burning mass upon the water, 80 miles from land. The Symmetry was then seven months out from Liverpool and her crew were on an allowance of provisions. She had put into Rio, where nearly all of her crew had deserted and a part of the new men shipped had afterwards mutinied and were now confined.

Thirteen days after being picked up by the Symmetry the American ship Fanchon of Newburyport, Captain Lunt, from Baltimore for San Francisco, cargo coal, was sighted and Captain and Mrs. Bates were transferred thereto. Captain Bates was forced to pay Captain Thompson of the Symmetry $150 claimed due for board and lodging. For this act Captain Thompson was afterwards discharged by his owners, who refunded the money.

The Fanchon had a new system of ventilating her holds and Captain Lunt was very positive that no disaster such as had occurred to the Nonantum or Humayoon could happen to his ship. Mrs. Bates, however, reported smelling gas on the evening of December 25 and also the following day, but searches of the ship failed to locate any evidence of fire. However, three days later a slight smoke was thought to be seen issuing from a ventilator. A thorough examination disclosed nothing unusual in the 'tween decks and on taking off the lower hatch the cargo was apparently all right. On digging down into the coal, however, it was found to be red hot at a depth of 2 to 3 feet. The hatches were immediately battened down and caulked and a course steered for the Galapagos Islands, the ship being then about 1200 miles from land, and about equally distant from those islands and the mainland. However, on account of light winds the course was soon changed toward the Peruvian coast, which was sighted at a point near Sechura Bay, three weeks after the discovery of the fire. When about two miles from the shore all the spare spars and everything available that would float were cast overboard to drift ashore and the ship was run close in and scuttled. A landing was made through a heavy surf, but no provisions could be saved and two hours after being abandoned the ship, still under full sail, burst into one solid sheet of flame clear to the mast heads. In a few hours only a smoking hulk remained, the 26 survivors on the sandy beach watching their former home and all their sustenance disappear.

The next day some Indians came ashore in bolsas and sold them fresh water and sweet potatoes, taking in part payment a pet goat. They positively refused to transfer any of the party to Paita, 50 miles distant, for any consideration, expecting to get high prices for furnishing water and such scant food as they could supply. Mate McCrellis with four men left at once in the boat for Paita, returning about a week later in an American bark which had been chartered to Consul Ruden to pick up the castaways. On their arrival at Paita, they found Captain McKenzie and crew of the Humayoon, who had been dropped by the Symmetry off the coast and had come ashore in their own boats. Here at a port where neither Captains Bates, McKenzie or Lunt had ever intended to visit, these three met, each having lost his ship by fire.

From Paita the Bateses proceeded to Panama in the bark Carbargo and thence went north in the P. M. S. S. Republic, arriving at San Francisco the last of April, 1851. The Republic had a close call from destruction on the voyage, due to an exploding cask of alcohol setting fire to the engineer's room on deck, but though much confusion resulted, the fire was soon got under control and was extinguished without much damage resulting. Another incident on the voyage up was the falling in with the Symmetry in port at Acapulco.

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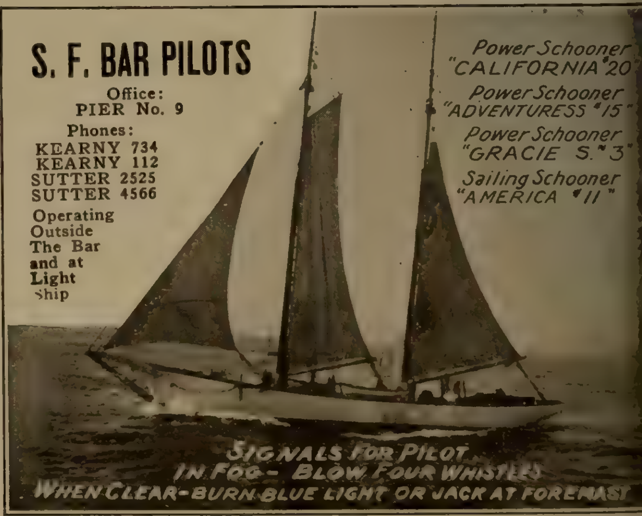

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# Pacific Marine Review

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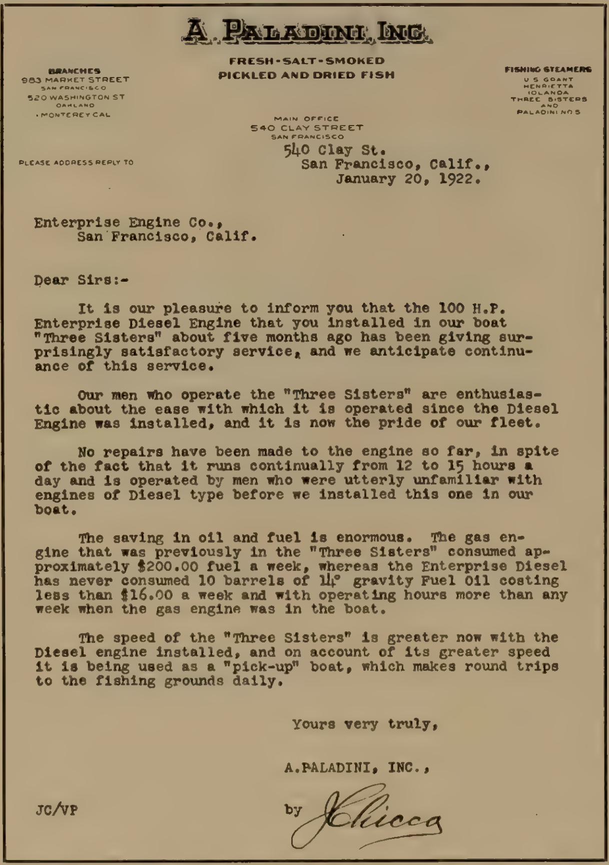

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# MOTORSHIP PROGRESS

## The High Spots of Ten Years of Strenuous Endeavor for Improvement in Marine Engineering Practice

By A. J. DICKIE

JUST ten years ago the first large ocean-going motorship was an experiment. This vessel, the Selandia, a sturdy freighter 370 feet long, 53 feet beam, and 27 feet molded depth, built by the then well known steamship builders, Burmeister & Wain of Copenhagen, Denmark, had a twin screw power plant burning oil in the cylinders of her engines. At every port where she touched from London clear to San Francisco and back crowds of curious engineers and shipbuilders and shipowners came down to the waterfront to examine this heretic that had forsaken the orthodox ways of steam and dared the dangers of the deep without boilers and without firemen. Many an old Scotch engineer was heard muttering away about "these newfangled notions" or "just gie her time till her valves gets choked up." Everyone admired the nerve of the Danes in trying such an experiment, but practically everyone was sure that as there was "no successful commercial motorship it was better to stick to the good old-fashioned triple expansion steam engine and the Scotch boiler."

What a change has come in those ten years! Today there are over 2,000,000 deadweight capacity tons of motorships afloat, and last year the shipyards of the world launched 136 sea-going motorships aggregating 306,642 gross tons. Twenty-nine of these vessels were of 5000 gross tons and upward. One was of 8681 gross tons, one of 8654 gross tons, and one of 9500 gross tons.

Last year saw the Diesel engine adopted for the first time on an ocean-going passenger vessel, and last year witnessed the fact that while thousands of tons of steamers were laid up for lack of cargoes, every available motorship was kept busy. So that today the motorship is recognized by shipping authorities the world over as having certain very marked advantages over the steamer.

Just how great these advantages are is dependent on many factors. British experts figure that on a rough general average the motorship has an advantage of 40 per cent in fuel cost of operation alone. There are, of course, in addition many incidental advantages such as ability to make world-round voyages with one bunkering, smaller crew, less standby loss, and steadier sea speed. We say nothing here of greater carrying capacity. We prefer to compare motorships with steamers of equal carrying capacity and approximately similar first cost, and we are pretty well convinced that with identical carrying capacity and after setting aside enough to take care of the difference in first cost, a good first class motorship can show about 20 per cent better earnings than the best steamer.

Another feature of motorship operation which gives a very great advantage in comparison with either reciprocating engine or turbine steam plants is the ease and facility with which emergency repairs can be effected at sea with a minimum of delay, and in quite a number of minor repairs without any stoppage of the engines.

In the January-February, 1922, bulletin of the American Bureau of Shipping there is given under caption, "A Creditable Performance", an example of emergency repairs on a Shipping Board steamer of the standard single screw, slow speed, triple expansion engine type. We reproduce herewith the story as given in the bulletin and thoroughly agree with the bulletin that the engineer in this case showed very commendable resourcefulness in effecting the necessary arrangements to run his crippled engine and keep the ship on her way:

"The steamship Eastern Soldier, a Shipping Board vessel operated by the Black Diamond Steamship Company on her last voyage, from Baltimore to Rotterdam, made an excellent eastbound passage. She covered a total distance of 3000 miles in thirteen days and twenty-one hours, averaging ten and a half knots per hour. Mean draft during passage twenty-five feet.

The performance of the main engines was satisfactory. Average R. P. M. 61.2 developing 2992 H. P. Fuel consumption 92.1 barrels of oil per 100 miles of steaming.

The cargo was discharged at Rotterdam and vessel proceeded to Antwerp to load for her return to the United States.

The Eastern Soldier left Antwerp on October 29, at 9:46 p. m., with main engines in apparently as good condition as upon her arrival. On October 31 at 8:45 a. m. a peculiar noise developed in the L. P. cylinder. The chief engineer, Mr. David C. Forsyth, decided to stop immediately. On raising the L. P. cylinder cover he discovered that the piston was cracked across its full diameter of seventy-five inches, disabling the engine, a triple expansion, so that it could not run.

The chief, being one of the best type of marine engineers, did not advise the captain to call for help, although they were not very far from Falmouth, England, at the time. On the contrary, he advised that the vessel would be ready to proceed on her voyage in six hours' time. In five and three-quarter hours the L. P. cylinder had been disconnected and the engine was ready to proceed on the voyage with high and intermediate cylinders working. The average speed of the vessel on the passage westward under H. P. and I. P. cylinders was nine and twenty-eight hundredths knots per hour. She arrived in New York on November 14, at 5:45 p. m.

Had Mr. Forsyth been less resourceful, the vessel would have spent several weeks in port, delaying the delivery of the cargo and placing owners and underwriters under extra heavy expense.

The Bulletin believes that happenings of this character should be brought to the attention of all parties interested. If delays were avoided such as herein described, many ships and voyages would be highly successful where now the balance is on the wrong side of the account."

Had this accident occurred on a standard motorship with an engine room crew as familiar with motorship operation as the crew of the Eastern Soldier evidently were with steam engine operation, what would have been the procedure? A Diesel engine of this power would probably have six cylinders. Each of these cylinders would be of the same diameter, and she would be carrying as her regular spares either one or two pistons with the piston rod and rings complete. In the event of one piston cracking, the cylinder containing that piston could have been disconnected in about one-half hour and the ship would then have been ready to go ahead with five-sixths of her total power. Or possibly in less than six and at the outside in less than eight hours the cracked piston could have been replaced with the spare and the ship have been ready with her full engine power to drive ahead.

In the case of this emergency repair on the steamer the total time lost on her voyage, including the time spent in emergency repairs and the time lost through slower speed, was in the neighborhood of three days, whereas on the motorship it need not have been over eight hours. When, in addition to this saving of time, you compare the fuel consumption, which on this steamer by a rough calculation from the figures given, would be about 1.15 pounds per indicated horsepower hour (and this figure, by the way, is a very good showing for the ordinary triple expansion plant) with the corresponding figure for a Diesel, which we have shown above on the average over a long period for four motorships to be 0.319 pounds per indicated horsepower hour, you get some little conception of the real operating advantages of the Diesel-engined motorship in comparison with the oil-burning steamer.

The best evidence of the reliability and superior economy of motorships lies in their long-continued service at sea under commercial conditions. Gotaverken have recently published some very interesting figures on the performance of the motorships built and engined by them under the Burmeister & Wain license. These figures cover six motorships: the Bullaren and Tisnaren of 9500 tons each with 4000 I. H. P. motors; the Stureholm, a 7800-tonner with 2800 I. H. P.; and the Balboa, Buenos Aires and Canada, sisters of 9350 tons each, with 3100 I. H. P. At the time the figures were compiled these six motorships had covered a total mileage of 316,000 during a period of three years. Of this total distance the Bullaren accounted for 128,600 miles and the Tisnaren 130,354 miles. On both these ships the machinery developed an average horsepower at sea slightly in excess of the designed horsepower, and the fuel economy average was decidedly better than that obtained on the trial run.

It would be exceedingly difficult to find a steamer that would show as good economy at the end of three years' hard service as she had shown on a builder's trial trip, but a properly designed Diesel power plant will always do that very thing if it is given half a chance. This ability of her Diesel engine to deliver maximum power for a given amount of fuel and to deliver constantly, irrespective of the personal equation which is such a large factor in the stoking and maintenance of steam generators, gives the motorship a very decided advantage for ordinary tramp service where it is difficult to get and keep a good working force in the fire room.

Returning to the figures on these Gotaverken motorships, we find that the average fuel oil consumption for all purposes over the 316,000 miles for the six ships was only 0.319 pounds per indicated horsepower hour, which is certainly very small when compared with the fuel consumption of the ordinary or even the best cargo steamers.

Comparative figures could be duplicated by hundreds of motorships under European flags and by some few motorships and hundreds of motorboats under the American flag. The William Penn, the Kennecott, the Charlie Watson, the Harper, and the soon to be finished Californian and Missourian, are first class examples of steel sea-going motorships that will bear comparison with any of the European fleet. They are only the beginning, and when their performance records begin to percolate through the brain cells of our ship operators, we will see that soon to be established $125,000,000 loan fund put to a proper and profitable use in converting many of our good steel steamers to better steel motorships. There is plenty of plant already established with organization experienced in design and construction to insure good reliable Diesel engines for our cargo ships. That plant and organization should prepare themselves now for the great demand that is inevitably coming.

Every Diesel engine builder in America should have ready designs adapting his engine to ships as they are so that replacements can be made with the least possible structural change and at the least possible capital outlay. The engine builders who solve this problem satisfactorily are going to have many orders.

Some builders have satisfactory designs already for conversion jobs on standard freighters. The cost of conversion at present prices is very high, but the high cost fixed charges would be greatly reduced by the proposed low interest rates on the government loan fund, and it might be possible if any large demand develops that on quantity production of engines the first cost itself would be greatly reduced.

At any rate, there is every reason for the American Diesel engine builder and the American shipbuilder to get together and work together for their mutual benefit and for the upbuilding of a permanent American merchant marine based on superior service and economy.

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## ERRATA

In an article published in our February issue under the title "The Largest Geared Motorship" reference was made to the Falk reduction gears on the motorship Libby Maine. The writer of that article indicated that the tooth pressures on the Libby Maine's gears were about one-half those used in ordinary marine turbine practice. The chief engineer of the Falk Company informs us that the Libby Maine's gears were designed for a net pressure of 730 pounds per inch of face and that "these gears correspond to the low speed gears used on double reduction turbine drives for freight steamers. The average pressure per inch of face used on more than 200 Falk turbine drives of this type ranges from 700 to 850 pounds."

We are personally thankful for this information and glad to give it prominent publicity for our readers.

# FIRST AMERICAN DIRECT CONNECTED SINGLE SCREW MOTORSHIP

### Hog Island Standard Type "A" Vessel Changed to Diesel Propulsion by the William Cramp & Sons Ship & Engine Building Company with a Slow Speed Long Stroke Marine Heavy Oil Engine of the Burmeister & Wain Type

As there has been a great deal of discussion during the past year in reference to the desirability and means of converting existing steam vessels to motorships, it should be of interest to readers of Pacific Marine Review to learn that the Cramp Company of Philadelphia have taken the initiative in the matter and propose to start work on the conversion of a vessel to show specifically the advantages to be gained. Accordingly, they have offered to purchase from the Shipping Board one of the Hog Island "A" boats, which has been tied up for some time. The Cramp Company's bid has been accepted and this vessel will shortly be towed to their yard to make ready for the reception of the new Diesel machinery, which is now under construction at their works.

The Hog Island type of vessel was decided on for various reasons, chief of which is that the size is economically most suitable for the general oceanic cargo trade. The particular type is also strong, and well built, and easy to drive, due to its good under-water form, as verified from tank tests and in actual service. The size also permits of the single-screw being maintained for the Diesel drive with minimum hull changes required for its adoption.

#### New Machinery

In place of the double reduction geared turbine and watertube boilers, there is to be installed one of the new type of long-stroke slow-speed Diesel engines, recently developed by Burmeister & Wain for single-screw vessels, and particularly adapted to conversion work. It will have six cylinders of 29⅛-inch diameter, same as the engines for the American-Hawaiian Company's motorships Californian and Missourian, but 59-inch stroke instead of 45¼-inch, due to the slower speed of revolutions for the single-screw vessel. The revolutions will be the same as for the steamer, namely, from 85 to 90 R. P. M., and it is estimated the power, 2300 I. H. P., will give the vessel a maximum speed of 10.5 knots loaded, and a mean sea speed of 10 knots in service. Although the rated power of the Diesel engine is not as high as that of the geared turbine machinery being replaced, there will be very little difference in the mean sea speed of the two vessels for all-round year service. This is chiefly due to the speed of the motorship being more uniform, the Diesel engine being able to maintain its rated maximum power indefinitely, as indicated on trial trip, which is not usually the case with the steam vessel, whose power at times may drop to as slow as 75 per cent of its rated power. Also, in rough weather the single-screw motorship can better maintain its speed, due to the absence of all tendency to racing of the screw, which advantage is inherent with the Diesel engine fitted with overspeed governor.

#### Structural Changes

The existing tailshaft and propeller will be retained, but a new lineshaft with new lineshaft bearings will be installed along with a new thrust bearing. In the engine room, in addition to the main engine, there will be three 100 B. H. P. auxiliary Diesel engines, each connected to a 67-kilowatt generator. The other engine-room auxiliaries will be electrically driven and in accordance with the usual Burmeister & Wain arrangement. A small donkey boiler will supply steam for heating and fire smothering purposes, and also for heater coils located at fuel oil suctions in inner bottom fuel tanks. This latter, an old heating system used in the steamer, will be left in place.

For the deck machinery a new steering gear of the hydro-electric type will be installed, as well as ten new electric winches. The existing windlass and capstan will be changed from steam to electric motor drive.

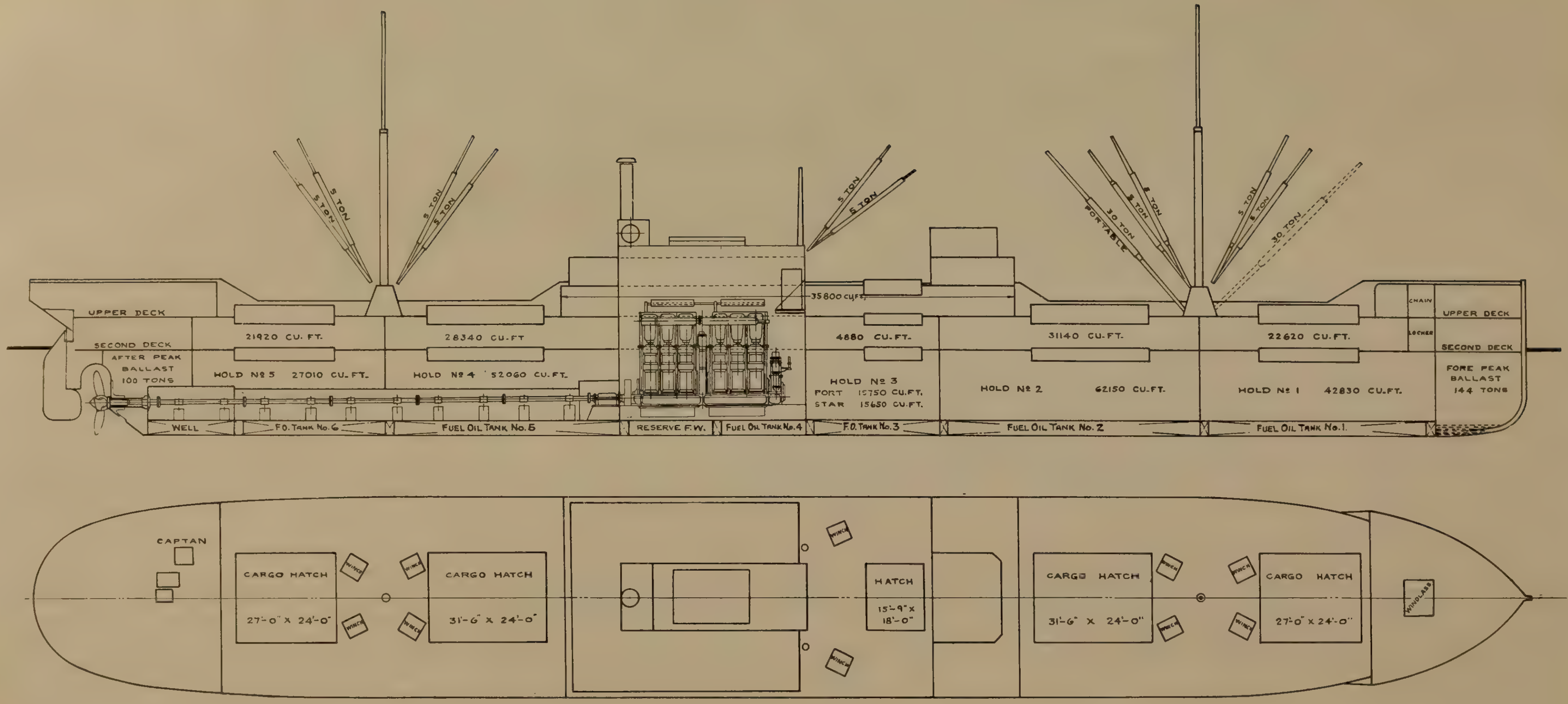
#### Added Cargo Capacity

No change to the shaft tunnel, thrust recess or line shaft foundations will be required. The after engine room bulkhead and forward boiler room bulkhead will be retained, and the old screen bulkhead between engine room and fire room removed. The stack will be removed and the boiler room hatch thrown into the engine room hatch by taking out the coal chute and relocating bath rooms of engineers and petty officers to a place outside of the wake of hatch space, made possible by the reduction in number of engineer personnel required. The space in boiler room between second and upper decks and between five frame spaces, as provided for the old boiler uptakes, will be thrown into the cargo space by closing up openings to old boiler hatch, thereby adding 946 cubic feet more space available for cargo. The two fuel oil deep tanks of the steamer, located near center line of vessel and forward of boiler room (and not required for motorship), will be thrown into No. 3 hold, giving an additional cargo space of 4840 cubic feet. The No. 3 hold is divided at center line and is arranged for carrying about 1000 tons of water ballast, which eliminates the necessity of carrying dry ballast. The bulk cargo capacity of the motorship over the steamer will accordingly be increased, in grain, by 5756 cubic feet and, in bales, by 5516 cubic feet. Compared with the steamer operating on coal fuel, having No. 3 hold filled with coal as provided, the motorship will have 35,220 cubic feet more grain capacity and 31,400 cubic feet more bale capacity. When carrying deadweight cargo the motorship will carry approximately 1000 tons more cargo than the steamer when the latter is burning oil, for the maximum radius of action of the steamer.

#### Gain in Economy

The fuel consumption for the motorship at sea will be 6½ tons per day, when running at 10 knots speed, or at least 20 tons less per day than the present consumption of these vessels when burning oil and running at the same speed. The fuel oil consumption of the motorship in port will be about one-half ton, as compared with from four to six tons for the steamer.

With all fuel tanks filled, as actually provided for the two vessels, the motorship will have a maximum



SCALE 1/16 IN =1 FOOT

## CARGO CAPACITIES

| | BALES | | GRAIN | |
|---|---|---|---|---|
| | LOWER HOLD CUBIC FEET | TWEEN DECKS CUBIC FEET | LOWER HOLD CUBIC FEET | TWEEN DECKS CUBIC FEET |
| HOLD Nº 1 | 42,850 | 22.620 | 46.110 | 25.000 |
| " " 2 | 62,150 | 31.140 | 64.670 | 32.630 |
| " " 3 PORT | 15.750 | 14.880 | 17.610 | 16,000 |
| " " 3 STAR. | 15,650 | | 17.610 | |
| " " 4 | 52,060 | 28.340 | 55.310 | 29.690 |
| " " 5 | 27,010 | 21.920 | 29.970 | 23,100 |
| SIDE OF ENGINE HATCH CASING PORT | | 4.283 | | 4,968 |
| " " " " " STAR. | | 4,283 | | 4,968 |
| TOTAL | 215,470 | 127,466 | 231,280 | 136,356 |
| TOTAL BELOW UPPER DECK | 342,936 | | 367,636 | |
| UPPER DECK TO BRIDGE DECK | 35,800 | | 38,360 | |
| TOTAL CARGO SPACE | 378.736 | | 405,996 | |

BALE CARGO CAPACITIES ARE TAKEN TO TOP OF BOTTOM CEILING OR TOP OF DECK PLATING TO BOTTOM OF BEAMS INSIDE BEAM BRACKETS AND 2" CARGO BATTENS INCLUDING SPACE IN HATCHES TO BOTTOM OF HATCH COVER. GRAIN CAPACITIES ARE TAKEN FROM TOP OF BOTTOM CEILING OF DECK PLATING TO BOTTOM OF BEAMS AND OUT TO SHELL INCLUDING HATCH SPACE AS FOR BALES

## FRESH WATER CAPACITIES

| | |
|---|---|
| RESERVE TANK UNDER ENGINE ROOM PORT & STAR. | 125 TONS |
| DRINKING WATER TANK IN TWEEN DECKS | 6000 GALS. |

NOTE 36 CUBIC FEET = 1 TON

## FUEL OIL TANK CAPACITIES 95% FULL

| | TONS | | |
|---|---|---|---|
| | PORT | STAR | TOTAL |
| INNER BOTTOM Nº. 1 | 87.6 | 87.6 | 175.2 |
| " " " 2 | 172.2 | 172.2 | 344.4 |
| " " " 3 | 87.1 | 87.1 | 174.2 |
| " " " 4 | 58.1 | 58.1 | 116.2 |
| " " " 5 | 134.3 | 134.3 | 268.6 |
| " " " 6 ℄ | 57 | | 57.0 |
| TOTAL FUEL OIL | | | 1135.6 |

DAILY OIL CONSUMPTION AT 10 KNOTS = 6½ TONS. TOTAL RADIUS = 40000 MILES FOR 1135 TONS.

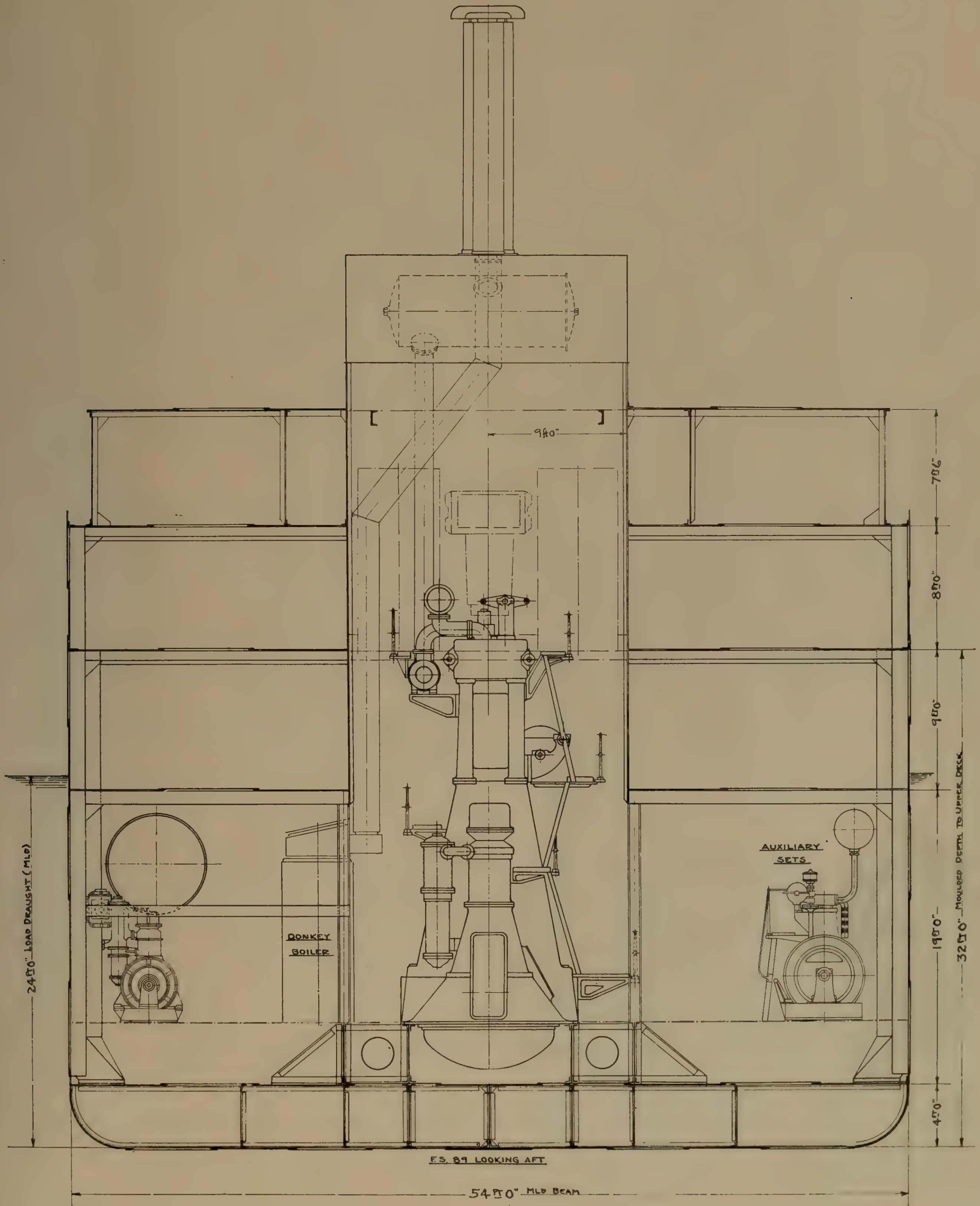
18° BAUME OIL 37.967 CU.FT. PER TON

## BALLAST TANK CAPACITIES

| | CUBIC FEET | TONS |
|---|---|---|
| FORE PEAK | 5.050 | 144 |
| AFTER PEAK | 3.400 | 100 |
| Nº 3 HOLD DEEP TANK PORT | 17.610 | 504 |
| " " " " STAR | 17.610 | 504 |
| TOTAL DEEP TANKS | 43.760 | 12.52 |
| INNER BOTTOM Nº 1 PORT | 3.504 | 100.1 |
| " " " STAR | 3.504 | 100.1 |
| " " " 2 PORT | 6.889 | 196.8 |
| " " " STAR | 6.889 | 196.8 |
| " " " 3 PORT | 3.487 | 99.5 |
| " " " STAR | 3.487 | 99.5 |
| " " " 4 PORT | 2328 | 66.5 |
| " " " STAR | 2328 | 66.5 |
| " " " 5 PORT | 5.369 | 153.4 |
| " " " " | 5.369 | 153.4 |
| " " " 6 ℄ | 2.280 | 1.50 |
| | 45424 | 12.976 |

NOTE 35 CUBIC FEET = 1 TON

Inboard profile, deck plan and capacity scales of Hog Island standard type "A" vessel as a single screw motorship. Note the engine installed in present engine room space without structural change



Midship section of Hog Island standard type "A" vessel showing long stroke, slow speed Diesel engine in place with donkey boiler and auxiliaries in the engine room wings steaming radius of 40,000 miles, as against 10,000 miles for the steamer.

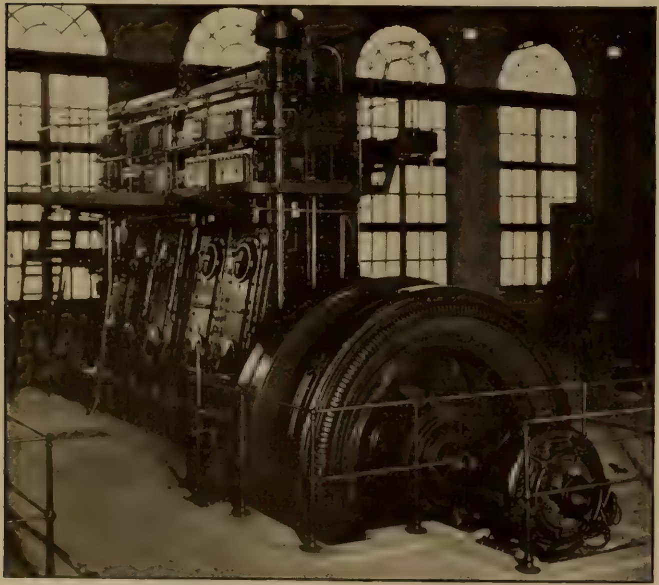
A comparison of the engineer personnel for the two ships is as follows:

| | Steamer (burning oil) | Motor-ship |
|---|---|---|
| Chief engineer | 1 | 1 |
| First | 1 | 1 |
| Second | 1 | 1 |
| Third | 1 | 1 |
| Electrician | 0 | 1 |
| Oilers | 3 | 3 |
| Water tenders | 3 | 0 |
| Firemen | 6 | 0 |
| Total | 16 | 8 |

A capacity plan of the vessel is given, showing the main engine and shafting in place, and as the vessel will appear when the conversion is completed; a cross section of the engine room is also shown to larger scale. The total weight of the Diesel machinery is almost identical with that of the steam machinery being replaced.

It will be seen from the foregoing figures that the operating costs of the converted vessel will be such that she will be able to compete on favorable terms with even the larger twin-screw motorships.

The Cramp Company are undertaking this work at their own expense, which is justified by the fact that they are building the thoroughly tried-out and standardized Burmeister & Wain type of Diesel machinery under their license and are therefore in a position to make definite guarantees regarding the results of the conversion. By the time she is ready for service, they propose to dispose of the new motorship to some American operator in order that the actual operation of vessels of this type may show the line of development that will permit American operators to compete on favorable terms with foreign tonnage. The officials of the Shipping Board are keenly interested in this conversion, which they believe will help solve the problem of maintaining a profitable American merchant marine.


Busch Sulzer type 4-C-17 installed at Palo Alto, California, municipal light and power plant, 750 B. H. P.

## NEW HEAVY OIL MARINE ENGINE

THE Standard Gas Engine Company at King and Dennison streets, Oakland, have recently announced their entrance into the heavy oil engine field. They have secured the manufacturing license from the patentees of one of the most successful heavy oil engines of the Middle West, an engine that for fifteen years has had a very high reputation for its work in stationary practice.

The engineer organization of the Standard Gas Engine Company are busily engaged in adapting the design of this engine to their well-known heavy duty marine standards. Embodied in the redesign will be many new and exclusive features which will make the Frisco Standard heavy oil marine engine a very highly developed product.

The first engine is now in the shop and will be in a boat about the first of May. It will be given a thorough working tryout under the most strenuous conditions and any necessary changes made in the details, so that the final product as placed on the market will be worthy of the Standard guarantee.

Six sizes of cylinders will be built, and combinations of one to six cylinders arranged for, so that thirty engine ratings will be available, ranging from 1-cylinder 7½-horsepower to 6-cylinder 300-horsepower. The ratings on this range of sizes are very conservative, being at least 10 per cent lower than the actual full-load brake horsepower developed by the same sizes in stationary practice.

Similar engines built by the patentees at Chicago showed 20 per cent overload capacity; 80 per cent mechanical efficiency; 0.57 pounds per hour fuel consumption on full load; and 27 per cent thermal efficiency. This was with an engine rated at 120 horsepower, 3-cylinders, 12¼ inches diameter and 13½-inch stroke, running at 300 R. P. M. The total weight of this engine was 18,000 pounds. The fuel used was 28 degrees Baume of 19,000 B. T. U. per pound.

This same engine, installed in a Canadian powerplant as standby for hydro-electric service, was run on 24-hour service, shutting down for inspection every two weeks, and gave an average fuel consumption of 0.9 pound of oil per kilowatt hour delivered at switchboard. On this continuous running the engine uses from 5 to 5½ gallons of lubricating oil per 24 hours.

## TEN HELPS FOR SLACK JOB PERIODS

TEN novel plans for preventing unemployment in individual factories and for relieving it where it has occurred have been reported to the President's Conference on Unemployment as being among those which promise the most help during industrial depression. Summarized they are:

1. Part-time work through reduced time or rotation of jobs.
2. Manufacturing for stock.
3. Making repairs and improvements to plant.
4. Simplification and mass production.
5. Reduction of prices to represent replacement values in terms of efficient production and distribution costs plus a reasonable profit.
6. Wider tolerances in order to permit price reduction.
7. Local community improvements to keep men busy.
8. The use of factory employment departments to obtain for their employes outside work or work in neighboring communities.
9. Distribution of aid by factory benefit societies.
10. Estimating and planning production far in advance to secure uniform production and employment.

# MAIDEN VOYAGE OF WILLIAM PENN

## America's Largest and the Shipping Board's Only Motorship Completes 24,000 Miles at Sea Without Engine Trouble. 12,350 Tons Capacity d. w. Around the World at an Average Speed of 11.3 Knots on a Daily Fuel Consumption of 13½ Tons Average, or Less Than $150 per Day

THE performance of the motorship William Penn is naturally being watched by shipowners throughout the whole world and particularly by American concerns and the United States Shipping Board. She is the only large vessel owned by the board equipped with oil engines and her behavior in comparison with corresponding steamers cannot fail to have an influence on the policy of the board and of American shipowners generally.

It will be remembered that she sailed from New York on September 3 on a maiden voyage which it was anticipated would last about six months, while the total distance covered was to be in the neighborhood of 20,000 miles.

### "Superior to Steamer"

On February 12 she arrived in the Thames, having covered 24,000 miles practically without incident and the behavior of the machinery and ship being perfectly satisfactory in every respect. The captain's opinion is that she is easier to handle and maneuver and is in all respects superior to a corresponding steamer, while the details, given later, will show that, so far as economy is concerned, she is a much more profitable vessel to run than either coal-fired or oil-fired steamers of the same size and speed.

It will be remembered that the William Penn is designed for a deadweight capacity of 12,375 tons and, although built by Pusey & Jones of Wilmington, Delaware, was equipped by the William Cramp & Sons Ship & Engine Building Company with machinery built by Burmeister & Wain of Copenhagen. She is a twin-screw craft, each engine developing 2250 i. h. p. at 115 r. p. m. and having cylinders 740 m.m. diameter and 1150 m.m. stroke. At full draft the speed attained with the engines running at maximum power is about 12½ knots, and it is therefore significant to note that for the whole 24,000 miles the average speed works out at 11.3 knots.

### Itinerary

Since leaving New York the William Penn has called at Panama, Honolulu, Yokohama, Kobe, Shanghai, Fuchow, Swatow, Hongkong, Manila, Soerabaya, Singapore, Port Said, Marseilles and London. The longest non-stop run has been one of nineteen days from Singapore to Port Said at an average speed of 11½ knots.

The propelling machinery is of Burmeister & Wain standard design, differing in no particular whatever from that installed on numerous motor vessels built in Scandinavia and in the United Kingdom. The fuel consumption throughout has worked out at not more than 0.3 pound per i. h. p. hour and the average daily fuel consumption for the whole voyage has been 13.5 tons. This includes the oil required for heating the boiler as well as for the auxiliary generating sets and is obviously a good result. A corresponding steamer using coal would require well over 50 tons daily, while an oil-fired steamer would burn somewhere in the neighborhood of 35 tons every 24 hours. It is therefore not difficult to realize the economy which this shows over steamships, and when the full details of the cost of the voyage are available the economy effected will probably surprise even the most enthusiastic believers in the internal combustion engine.

### No Engine Trouble

As regards reliability there has been a complete absence of trouble both with the main and auxiliary machinery. The only stop that has occurred at all, a half hour, was with one engine, this being necessary in order to tighten up a leaky joint in the telescopic pipe system for cooling the pistons.

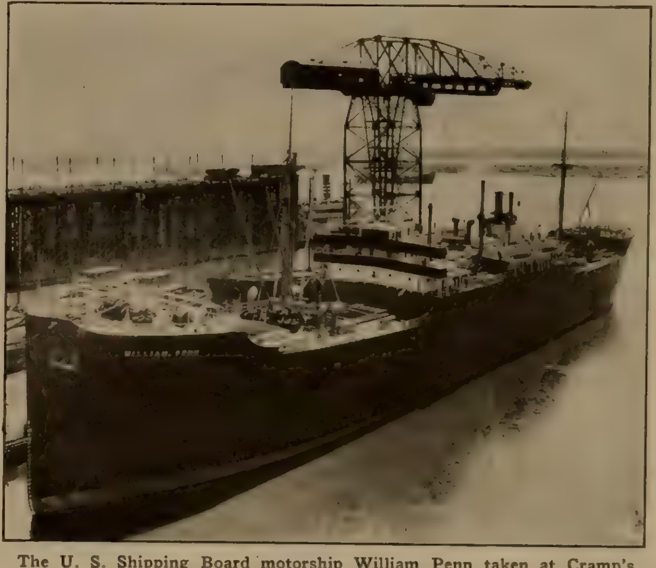
It is understood that the average cost of oil fuel has been in the neighborhood of 4½ cents per gallon, or, say, $11 per ton. The daily fuel bill for driving this ship of 12,375 tons at a speed of 11.3 knots has therefore amounted to no more than $150. It is sometimes stated that the consumption of lubricating oil on a motorship is very heavy, but on the William Penn this has not exceeded 16 gallons per day.

### Long Cruising Radius

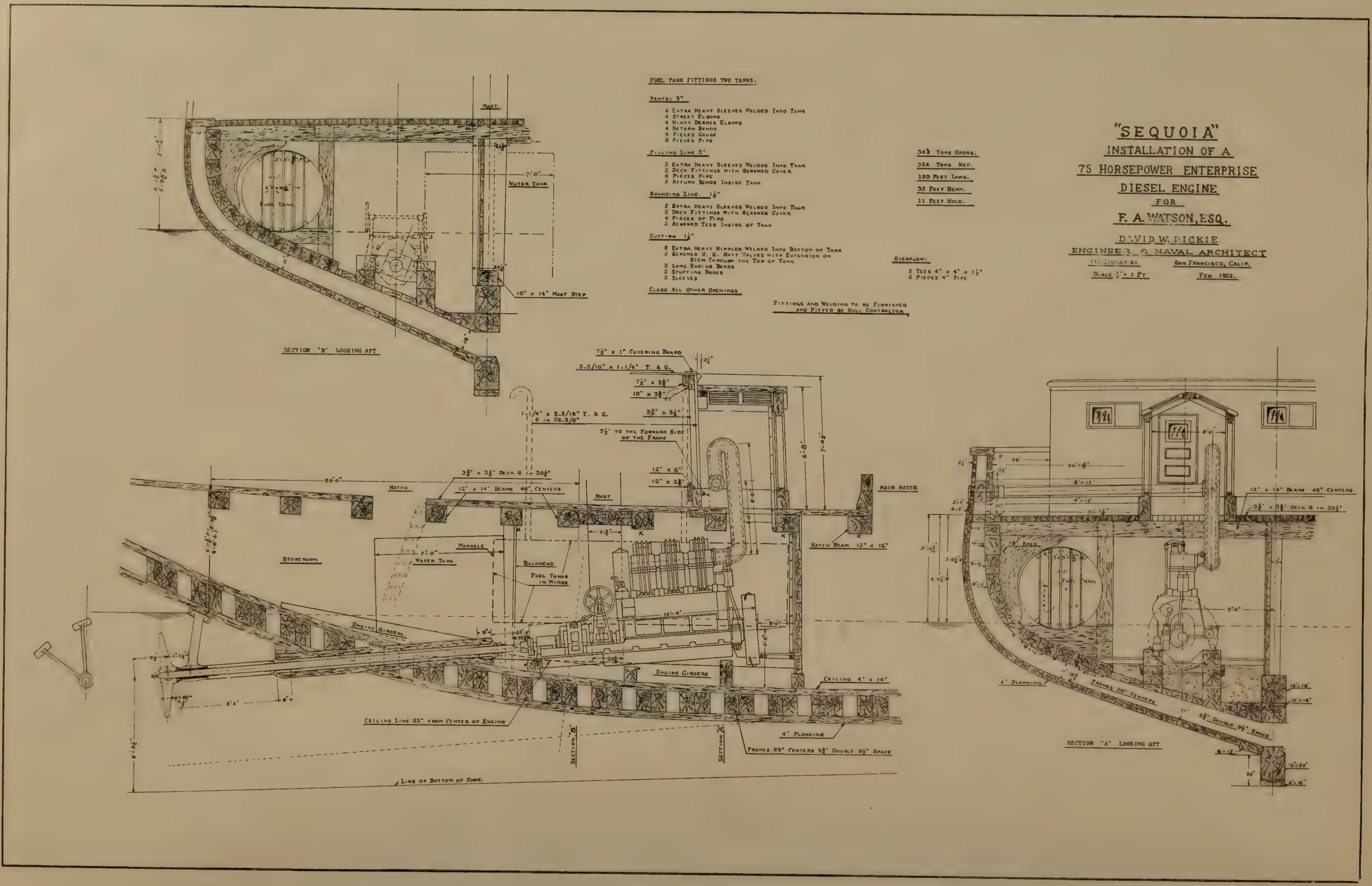
Apart from the economy in fuel the vessel has effected savings in other directions. She carries 1340 tons of fuel oil and is therefore independent of fueling stations, this probably being sufficient for 100 days' run at full speed. Again she is equipped with electrically driven winches, and in comparison with steam winches it is believed that the fuel bill for their operation has amounted to no more than one-eighth of the normal, where steam plant is utilized. No repair work has had to be carried out, and even in regard to the replacement of valves occasionally for cleaning, the machinery has proved exceptionally satisfactory. It is sometimes thought that exhaust valves in four-cycle engines must be removed and cleaned every two or three weeks, but in the case of this ship a change is made only after about one thousand hours' running.

The behavior of the vessel speaks volumes for the efficiency of the engine room staff, which is on the small side, comprising as it does only one chief engineer, three assistants and one electrician.

Altogether it may reasonably be said that the William Penn has proved a pronounced success both from a technical and from a commercial standpoint.



The U. S. Shipping Board motorship William Penn taken at Cramp's outfitting dock just after her trial


"SEQUOIA"
INSTALLATION OF A
75 HORSEPOWER ENTERPRISE
DIESEL ENGINE
FOR
F. A. WATSON, ESQ.
DAVID W. DICKIE
ENGINEER & NAVAL ARCHITECT
Market St.
San Francisco, Calif.
Scale 1/2" = 1 Ft
Feb 1922.
343 Tons Gross.
324 Tons Net.
150 Feet Long.
33 Feet Beam.
11 Feet Hold.
Fuel Tank Fittings Two Tanks.
Vents: 3"
4 Extra Heavy Sleeves Welded Into Tank
4 Street Elbows
4 Ninety Degree Elbows
4 Return Bends
4 Pieces Gauze
8 Pieces Pipe
Filling Line 3"
2 Extra Heavy Sleeves Welded Into Tank
2 Deck Fittings with Screwed Cover
4 Pieces Pipe
2 Return Bends Inside Tank
Sounding Line. 1 1/4"
2 Extra Heavy Sleeves Welded Into Tank
2 Deck Fittings With Screwed Cover
4 Pieces of Pipe
2 Screwed Tees Inside of Tank
Suction 1 1/2"
2 Extra Heavy Nipples Welded Into Bottom of Tank
2 Screwed U. S. Navy Valves with Extension on Stem Through the Top of Tank
2 Long Radius Bends
2 Stuffing Boxes
2 Sleeves
Close All Other Openings
Overflow:
2 Tees 4" x 4" x 1 1/2"
2 Pieces 4" Pipe
Fittings and Welding to be Furnished and Fitted by Hull Contractor
Mast
Water Tank
Fuel Tank
7'-0"
10" x 14" Mast Step
Section "B" Looking Aft
7 1/2" x 1" Covering Board
3-5/16" x 1-1/4" T. & G.
7 1/2" x 3 1/2"
10" x 3 1/2"
1-1/4" x 3-5/16" T. & G. 8 in 26-3/8"
3 1/2" x 3 1/2"
5 1/2" to the Forward Side of the Frame
12" x 6"
12" x 2 1/2"
6'-8"
7'-4 1/2"
3 1/2" x 3 1/2" Deck 8 in 30 1/2"
12" x 14" Beams 48" Centers
20'-0"
Hatch
Mast
Main Hatch
21 1/2"
K
Hatch Beam 12" x 16"
Manhole
7'-0"
Water Tank
Storeroom
Bulkhead
Fuel Tanks in Wings
12'-4"
2'-0"
20 1/2"
Engine Girders.
Engine Girders
Ceiling 4" x 14"
Ceiling Line 22" from Center of Engine
4" Planking
Frames 89" Centers 9 1/2" Double 9 1/2" Space
Section "B"
Section "A"
Line of Bottom of Shoe.
8'-5"
6'-8 1/2"
30'-11 1/2"
4" x 12"
31'-7 1/2"
4'-0"
12" x 14" Beams 48" Centers
3 1/2" x 3 1/2" Deck 8 in 30 1/2"
10" Knee
Fuel Tank
5'-0"
4" Planking
Frames 29" Centers
9 1/2" Double 9 1/2" Space
16" x 18"
12" x 16"
16" x 22"
4" x 16"
Section "A" Looking Aft

# AN INTERESTING CONVERSION JOB

By D. W. DICKIE

THE three-masted schooner Sequoia, which has been for some years in the Alaskan trade, is a wooden pole-topmast type built at Fairhaven in 1890. She is of 341 tons gross register, 324 tons net, 150 feet long, 35 feet beam, and 11 feet depth of hold with a draft of 9 feet 2 inches forward and 9 feet 4¾ inches aft in light condition. Her keel extends below the rabbet of the planking 20 inches. Her freeboard light is 5 feet 10 inches to the lowest point in the sheer. Loaded with lumber until the deck is awash, she will carry about 310,000 feet of pine. With general cargo on 2 feet 2½ inches freeboard, she will carry 408 tons, all in the hold, or with 1 foot 6 inches freeboard she will carry 487 tons, part of which would be deck cargo.

This vessel has recently been purchased by F. A. Watson and associates of Los Angeles and is to be used in the Mexican trade. For this purpose several changes were made providing better galley equipment in the after deck house, re-arranging the space formerly used for fishermen to be used for Mexican passengers, and supplying the vessel with an auxiliary oil engine propulsion equipment and with provision for electric lighting.

### Auxiliary Power Plant

For certain reasons the owners wished to have a thorough tryout of one engine before installing twin screw, and it was decided that the starboard engine should be installed with its tailshaft and propeller in line and in position identical with twin screw installation. The experience of the writer with the pilot boat Gracie S., a shorter vessel in which 120 horsepower had been installed with a single screw off center, showed that an installation of this character can be used with practically no effect on the side drift in a vessel of this length with the small powers involved.

Two 75 horsepower Enterprise Diesels of the Hvid type as manufactured by the Enterprise Engine Company of San Francisco were decided upon for the twin screw installation, and one of these is being installed, as shown in the drawings accompanying this article. It is confidently expected that 5½ knots without sail will be obtained by the use of this engine.

Three-masted auxiliary motor schooner Sequoia

The Sequoia on drydock showing the lines of stern

The fuel problem came in on the job, as the vessel is to operate on the Mexican Coast where the 24 degree Baume fuel is unobtainable at every port. The main engine uses the steamer fuel and the auxiliary engine uses ordinary commercial gasoline.

The Enterprise Company offered the owners their choice of either a Hvid type engine or their regular high-pressure engine using a fuel pressure of 4000 pounds. The Hvid type was selected on account of the fuel, as the heater was not ready in time to test to meet the delivery required on the vessel. The new control on the engine was a very attractive feature, as by merely moving the lever attached to the governor the point of ignition is retarded by means of an eccentric in the same manner as in the gas engines manufactured by the same company. This enables the engine to be slowed down and run sweetly at all speeds.

The engine will have three cylinders 9¼ inches by 14 inches and will turn 318 revolutions per minute. The propeller will be two-bladed, 55½ inches in diameter and 30 inches pitch, with a propeller shaft 4½ inches in diameter.

Fuel for this engine is carried in two cylindrical tanks 4 feet 6 inches in diameter by 16 feet long. This gives a total capacity of 3800 gallons, sufficient for thirty days' cruising.

For electric lighting a Kohler automatic plant is being installed. This consists of a 4-cylinder gas engine running 1000 revolutions per minute and direct connected to a compound-wound generator. This is so connected to a simple panel board and a storage battery for starting purposes that the turning on of a light actuates the starting battery and the engine and generator are automatically started up and furnish power for the lights.

# FUEL INTRODUCTION SYSTEMS FOR INTERNAL COMBUSTION ENGINES

IN the development of the internal combustion engine the process of introducing the fuel into the cylinder, the mixing of same with the necessary air for proper combustion, is and has been the vital problem, and only engine types where this question has been solved in a satisfactory and practical way are giving the necessary economy and continuous satisfactory operation to insure their future.

Internal combustion engines using liquid fuels can be divided into two distinct large groups.

First, those with external mixing and gasification, so-called carburetor type engines.

And second, the type where these processes take place inside of the working cylinder.

Engines of the first group—that is, of the carburetor type—are confined to the use of light fuels, such as gasoline, distillate and kerosene, and although very important and perfected to a high degree, cannot find consideration for use aboard commercial types of vessels, and that mainly for two reasons, which are high fuel cost and the difficulty in building this type in large slow-speed units.

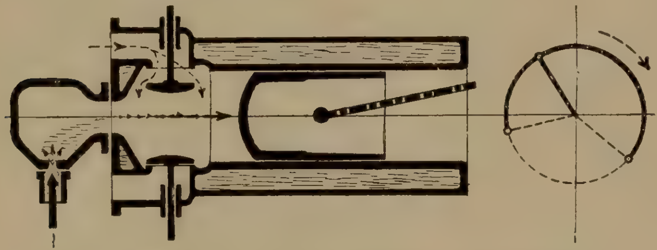


Fig. 1—Diagram showing fuel admission on Hornsby engine

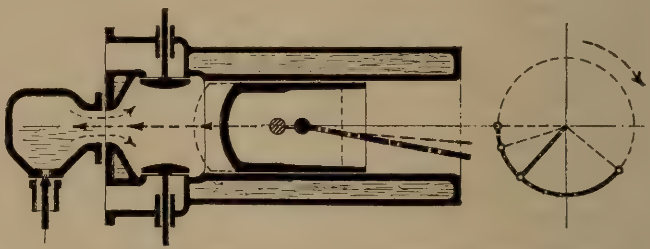


Fig. 2—Diagram showing action of compression in Hornsby engine

The second group, or the heavy oil engines, and the problem of fuel injection and its combustion in the cylinder, is the theme of this article.

Heavy oil engines are expected to operate successfully on kerosene, fuel oil and tar oils.

It is not possible, or at least very difficult, to atomize such oils finely enough so that they could be sufficiently mixed with air outside the cylinder, and that a good mixture be maintained during the suction and compression stroke. As soon as the fuel condenses and forms drops, ignition becomes unreliable and incomplete, slow combustion, and after burning takes place with resulting high fuel consumption and low efficiency.

Strong preheating of fuel and air to several hundred degrees would insure a better mixture, but the necessary reduction in weight of charge and the low compression necessary to prevent pre-ignition would again result in very low efficiency.

The first step towards improvement of heavy oil engines was to effect the process of gasification and mixing within the cylinder. The Hornsby heavy oil engine was the first to use this system. In this engine the fuel is injected into a vaporizing chamber connected to the cylinder during the suction stroke and is gasified on the hot walls of this chamber. The air is admitted during the suction stroke through a special valve and part of it enters the vaporizing chamber during the compression period. This chamber is restricted where it connects to the cylinder, for the reason that during the suction or admission period none, or at least very little, of the fuel vapors can enter the cylinder, as this may cause pre-ignition. In addition to this the fuel injections must be properly timed for the same reason. During the compression stroke air is forced into the vaporizing chamber and partial combustion of vapors takes place, but the increase in pressure due to these ignitions is not strong enough to blow the vapors out into the cylinder against the inrushing air caused by the inward traveling piston, and this especially at higher speeds. At the end of the compression stroke enough air is entered into the chamber to cause effective pre-combustion by the force of which the contents of the chamber are expelled into the cylinder where final combustion takes place.

The experience gained with this type engine was: That this process of operation was only adaptable for low-power high-speed engines. Only a low compression from 25 to 50 pounds per square inch was permitted, and the quality of mixture and combustion obtained left much to be desired. With increased cylinder dimensions the difficulties in obtaining a fair mixture of the vapors from the chamber with the air in the cylinder were increased.

Even under most careful consideration of all the details necessary, such as timing of injection, dimensioning of connecting neck between chamber and cylinder, size of vaporizing chamber, and amount of compression, it was very difficult to obtain continuous good operation.

A slight change in quality or composition of fuel would cause the mixture to become poor and deposits to be formed in the vaporizing chamber which changed the temperature conditions therein.

It was also difficult to keep satisfactory operation at different speeds and loads. At low speed there was the danger of the fuel vapors entering the cylinder too early and causing pre-ignition. At light loads very high fuel consumption was the result from incomplete combustion.

The experience with this type of engine soon lead to the conclusion that a higher efficiency and better

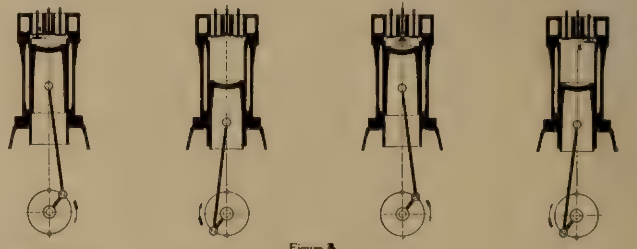


Figure 3.

(a) First stroke (admission stroke). Piston travels down; admission valve open; cylinder is being filled with pure air

(b) Second stroke (compression stroke). Piston travels up; all valves closed; air in cylinder is being compressed.

(c) Third stroke (power stroke). Piston travels down; fuel valve open at top dead-center, but closed at fraction of stroke; gases expand.

(d) Fourth stroke (exhaust stroke). Piston travels up; exhaust valve open; burnt gases are being expelled from cylinder.

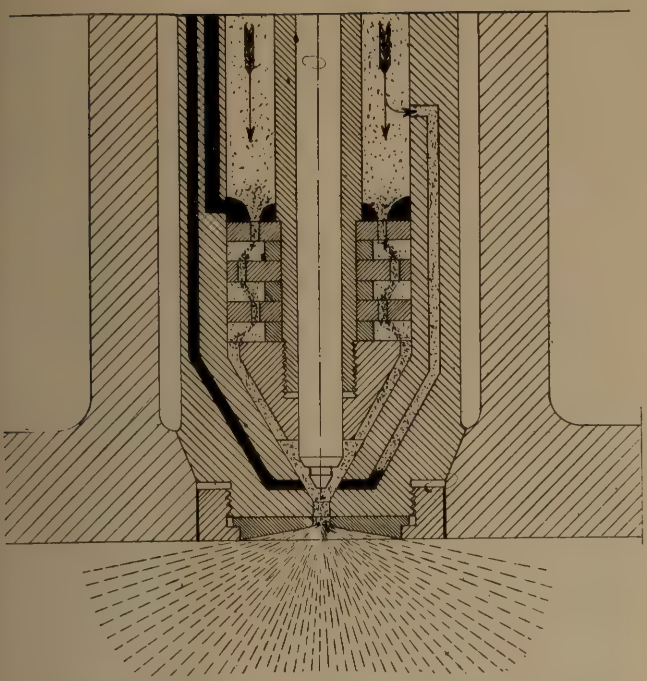


Fig. 5—Showing arrangement of Diesel nozzle for divided flow of fuel

fuel consumption was possible only by the use of much higher compressions, but only the experience obtained from Diesel engine practice brought real progress and new constructions in this line, some of which will be discussed later.

### Fuel Injection in Diesel Engines

The next step now will be an investigation of the process of fuel injection as it takes place in the Diesel engine. The Diesel process of operation is as follows: Air only is admitted during the suction stroke of the piston; this air is then compressed by the inward traveling piston to such a degree as to insure ignition and combustion of the fuel which is injected directly into the working cylinder. (See Figure 3.)

The high compression and temperature of the air in the cylinder at the time the fuel injection takes place is characteristic of the Diesel process. The compression in this type of engine amounts to about 500 pounds with a resulting temperature of 1000 to 1100 degrees Fahrenheit. The injection of the fuel begins at about ½ to 1 per cent of the stroke before the piston reaches the upper dead center and lasts until 10 to 14 per cent after upper center. The injection, vaporization, mixing and combustion of the fuel must take place in a very short time, which is only a fraction of the time available for this process in a carburetor-type four-cycle engine of same R. P. M. For the two or four-cycle process of operation the time available is the same in a Diesel engine of same R. P. M.

### Fuel Injection Systems

In order to inject the liquid fuel into the highly compressed air in the cylinder in such a short time, very high pressures must be used. It is also necessary that this pressure be maintained during the whole period of injection, in order that the fuel may penetrate the air in the cylinder and insure proper mixing and good combustion. Experiments by Dr. Diesel brought the following results:

Injection of the fuel by means of a pump only was was not sufficient to get good distribution in the cylinder with the amount of fuel necessary for one working stroke during the available time. It was neither possible to get good atomization nor sufficient distribution of the fuel in the combustion chamber, and consequently no good mixture was obtainable. The chief disadvantage was that with direct pump injection the pressure was not sufficient, as the amount was only the sum of the pressure in the cylinder and the pressure caused by friction in line and nozzle opening, and with a change in amount of fuel pumped and the change in speed of engine, this pressure varied. Further variation was caused by the different speeds of the pump plunger in its different positions, it being less towards the end of the stroke than in the middle. These are the principal reasons why Dr. Diesel and many others trying direct pump injection have failed.

In order to obtain and maintain the necessary pressure of several thousand pounds during the injection period, it is necessary to use an accumulator from which the fuel, when the needle valve is opened, is injected into the cylinder. It is under this principle that most of the so-called solid injection engines are working today. A further problem was to cause the fuel to enter the cylinder gradually, thus preventing explosions which would be caused by a sudden admission and each explosion would be detrimental to the engine without resulting in a good mixture and perfect combustion.

The injection and combustion process can be divided up as follows:

First: Injection of finely atomized fuel particles.

Second: Mixing of this fuel with the air in the cylinder.

Third: Vaporization of the fuel.

Fourth: Gasification and dissociation.

Fifth: Combustion and a slight pressure and temperature increase.

Sixth: Further injection of fuel.

Seventh: Repetition of both mentioned items.

These actions do not take place exactly in the manner described, but overlap each other. The mixing vaporization and combustion will take place simultaneously without interfering with final proper combustion. Of great influence, of course, in this process is the chemical composition of the fuel.

**(To be concluded)**

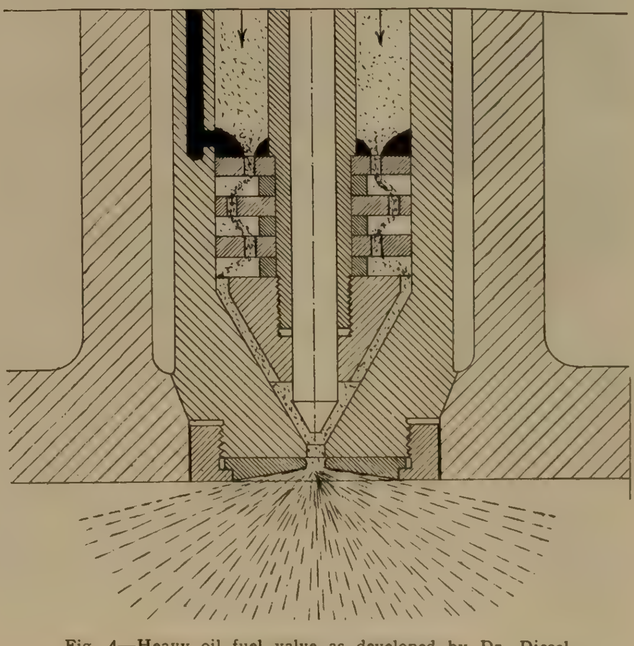


Fig. 4—Heavy oil fuel valve as developed by Dr. Diesel for air injection

# FROM GASOLINE TO HEAVY OIL

## Pacific Coast Engine Builder Kept Busy Taking Out Gasoline Engines and Installing Diesel Motors in Work Boats, Tugs, Fishing Vessels and Pleasure Craft

SINCE the Diesel engine has been developed in small powers and proved to be entirely reliable and simple to operate, there has been considerable interest among boat owners in replacing their gas engines with Diesel engines. The Atlas Imperial Engine Company of Oakland, California, has made a large number of such changes during the past year in tugs, freight and fishing vessels. The change has proved successful in every case and the owners are well pleased with the results.

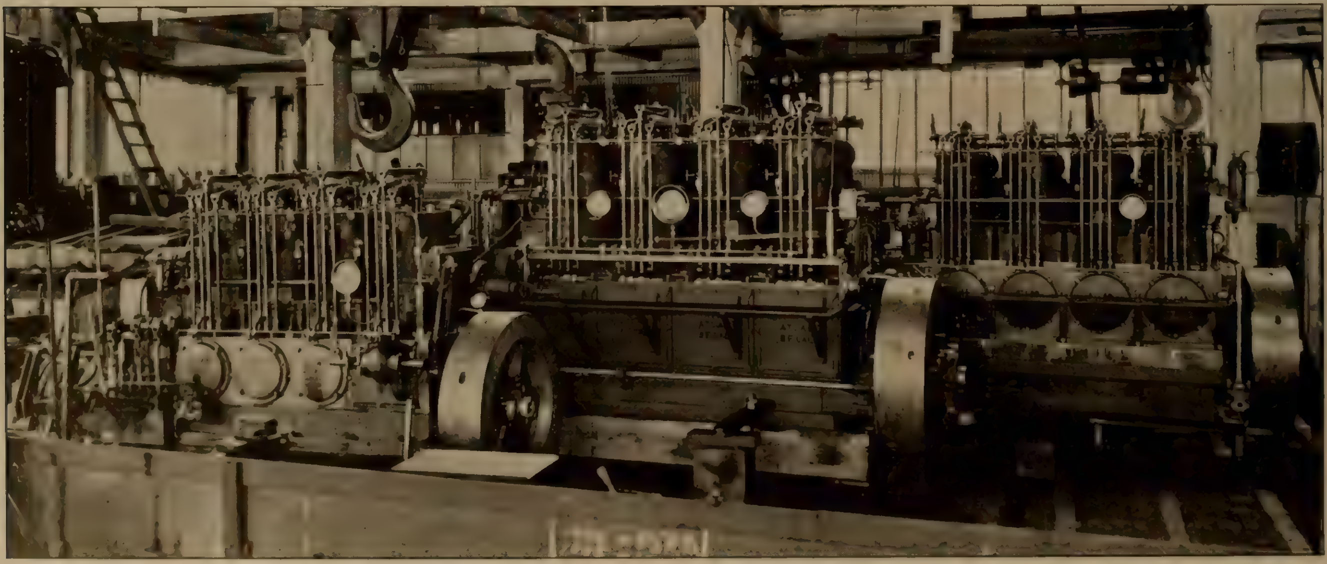
Among some of the changes recently made by the Atlas Imperial Engine Company are the tug Halcyon with 125 horsepower Diesel, tug Panama with 125 horsepower Diesel, tug Colon with 55 horsepower Diesel, freighter Suisun City with two 55 horsepower Diesels, fishing schooners Atlas and C. H. Foster each with 55 horsepower Diesels. The trading schooner and having their gas engines removed and Diesels installed, the former being fitted with 150 horsepower.

All these vessels have been gas-powered vessels and vessel; also the freighter Lark and tug Olava are now whaler Herman is now being converted into a Diesel have had the gas engines replaced with Diesel engines. They represent all types from the smallest tug to a Siberian trader and each is a successful installation, proving without a doubt that gas-powered vessels can be made very successful with Diesel engines.

The dock at the Atlas Imperial Engine Company's plant on Oakland's inner harbor showing power boats laid up for conversion

Since entering the market with the latest designs of mechanical injection Diesel engine, there have been a great many inquiries about the comparison of weight and space of the Diesel and gas engines. As a rule, a Diesel engine of the same power will weigh a little more than the gas engine and may in some cases take up slightly more space. However, as a matter of some comparisons, there are shown some figures compiled of a 65 horsepower, 90 horsepower, and 125 horsepower engine, which will be of interest. It is also interesting to note that several of the installations made by the Atlas Imperial Engine Company have replaced smaller engines; one of these is the tug Panama with 125 horsepower Diesel replacing an 85 horsepower gas engine; another is the fishing schooner C. H. Foster with a 55 horsepower Diesel replacing a 35 horsepower gas engine; another is the freighter Lark, which had 125 horsepower gas engine and now has a 150 horsepower Diesel.

Although there is a great variation in the weight of different makes of gas engines, the following comparisons will be of interest:



Test block at the Atlas Imperial Engine Company's plant showing three Diesel engines on test for marine jobs. In the center, a 250 H. P. engine for the whaler Herman; at the right, a 4-cylinder, 165 H. P. for a tow boat; at the left, a 90 H. P. 4-cylinder engine for the trawler Lincoln.

### 65 Horsepower

| | Diesel | Gas |
|---|---|---|
| Engine with flywheel and reverse gear, pounds | 9,500 | 8,000 to 8,500 |
| Shafting, propeller, piping and fittings, pounds | 890 | 890 |
| Air tanks or flasks, pounds | 700 | 160 |
| Fuel for 400 hours' running | 1,100 | 2,500 |
| Lubricating oil for 400 hours' running | 160 | 300 |
| Batteries, pounds | 0 | 200 |
| Auxiliary engine, pounds | 530 | 0 |
| Total, pounds | 12,880 | 12,050 to 12,550 |

### 90 Horsepower

| | | |
|---|---|---|
| Engine with flywheel and reverse gear, pounds | 11,770 | 9,000 to 11,000 |
| Shafting, propeller, piping and fittings, pounds | 1,000 | 1,100 |
| Air tanks or flasks, pounds | 700 | 160 |
| Fuel for 400 hours' running | 1,475 | 3,500 |
| Lubricating oil for 400 hours' running | 270 | 500 |
| Batteries, pounds | 0 | 200 |
| Auxiliary engine, pounds | 530 | 0 |
| Total, pounds | 15,845 | 14,460 to 16,460 |

### 125 Horsepower

| | | |
|---|---|---|
| Engine with flywheel and reverse gear, pounds | 20,450 | 13,500 to 23,200 |
| Shafting, propeller, piping and fittings, pounds | 1,170 | 1,170 |
| Air tanks or flasks, pounds | 1,000 | 250 |
| Fuel for 400 hours' running | 2,100 | 5,000 |
| Lubricating oil for 400 hours' running | 320 | 600 |
| Batteries, pounds | 0 | 250 |
| Auxiliary engine, pounds | 530 | 0 |
| Total, pounds | 25,570 | 20,670 to 30,470 |

The average work boat has an abundance of stability and the matter of changing a small amount of the weight is rather immaterial, the extra immersion being usually very small. Consequently the stability is not affected enough to make it a matter of consideration. Take, for instance, a 50-foot tug with an average beam of 12 feet: this vessel will have an immersion of about one ton to the inch, so in the case of a 90 horsepower the vessel after conversion will draw from one-half to one and one-half inches more water, which would scarcely be noticed in the ordinary work boat. In the 65 horsepower there would be scarcely any change in weight, and in the 125 horsepower a maximum change of two and one-half tons. In boats that carry as much as 125 horsepower the immersion is about one and one-half tons to the inch, making a maximum of less than two inches additional draft, which, of course, is hardly a matter for consideration in a work boat.

## PACIFIC COAST SHIPPING INDUSTRY

Copies of the Pacific Coast shipping directory reprinted in very convenient form from the January number of Pacific Marine Review are available for distribution. Pacific Marine Review will be glad to send this booklet free of charge on request.

One corner of the erecting floor in the Atlas Imperial Engine Company's shop showing 20 Diesel engines in various stages of completion

Pacific Marine Review
The National Magazine of Shipping

576 Sacramento Street
SAN FRANCISCO, CALIFORNIA U. S. A.

Official Organ of the Pacific American Steamship Association

Subscription Price, per year (Domestic) . . . . . . . $2.00
(Foreign) . . . . . . $3.00
Single Copies . . . . . . . . . . . . . . . . 25 cts

J. S. HINES . . . . . . . . . . Publisher
B. N. DeROCHIE . . . . . . . Business Manager
A. J. DICKIE . . . . . . . . . Editor
ANDREW FARRELL . . . . . . Associate Editor
M. G. HEDIN . . . . . Advertising Representative

NEW YORK OFFICE
339 at 30 Church Street
F. H. BEHRENS, Manager

Pacific Marine Review is sold at all leading News Stands
Entered as second class mail matter at Postoffice
San Francisco, California

Published on the First of Each Month. Copyright
1922 in the United States by J. S. HINES

## THE PACIFIC

**THERE is one knows not what sweet mystery about this sea, whose gently awful stirrings seem to speak of some hidden soul beneath; like those fabled undulations of the Ephesian sod over the buried evangelist, St. John. And meet it is, that over these sea-pastures, wide-rolling, watery prairies and Potters' Fields of all four continents, the waves should rise and fall, and ebb and flow unceasingly; for here, millions of mixed shades and shadows, drowned dreams, somnambulisms, reveries; all that we call lives and souls, lie dreaming, dreaming, still; tossed like slumberers in their beds; the ever-rolling waves but made so by their restlessness.**

**To any meditative Magian rover, this serene Pacific once beheld, must ever after be the sea of his adoption. It rolls the midmost waters of the world, the Indian Ocean and Atlantic being but its arms. The same waves wash the moles of the new-built Californian towns, but yesterday planted by the recentest race of men, and lave the faded but still gorgeous skirts of Asiatic lands, older than Abraham; while all between float milky-ways of coral isles, and low-lying, endless, unknown Archipelagoes and impenetrable Japans. Thus this mysterious, divine Pacific zones the world's whole bulk about; makes all coasts one bay to it; seems the tide-beating heart of earth. Lifted by those eternal swells, you needs must own the seductive god, bowing your head to Pan.**

HERMAN MELVILLE.

## SUBSIDY

THE Merchant Marine Act of 1922 (Jones Bill in the Senate—Greene Bill in the House of Representatives), submitted in both bodies simultaneously with the delivery of the administration's special message on aid to merchant shipping, is now squarely up to Congress. That this measure will meet with considerable opposition, both inside and outside of Congress, may be taken as a foregone conclusion. For the convenience of our readers we have elsewhere in this issue reproduced the bill verbatim with comments thereon by Chairman Lasker of the Shipping Board.

The fact that the people of the United States have such a large investment in merchant shipping at the present time and the added fact that there is a great popular movement going on to get behind the administration's plans in other directions will probably put through either the subsidy as outlined in these bills or some modified form of direct aid to American shipping.

There is considerable honest difference of opinion even among shipping men themselves as to the wisdom of all of the provisions in the act. All are agreed that there is need for a great amount of direct aid to American shipping in order to put that shipping on an even competitive basis with the shipping of other nationals, but all are likewise agreed that there are some factors other than difference in operation costs which inherently operate to the disadvantage of American shipping and which cannot be offset in any adequate way by direct financial assistance.

This Merchant Marine Act of 1922 is, in our judgment, right as a temporary measure. The amount of direct aid which it will bring to the ordinary American steamer engaged in foreign trade is not by any means sufficient to offset the difference in operating costs between that American steamer and its British competitor, to say nothing of Japanese, Norwegian, or other competitor; but it will certainly be sufficient to help in materially reducing the gap, and it should be of immense psychological benefit, if properly administered, in bringing to the shipowner and ship operator the encouragement which comes from the knowledge that the Federal government is behind him in his efforts to further American trade.

In this connection we have figured out roughly the amount of direct aid which would come to various sizes and speeds as represented in the present American merchant marine. Figuring that the ordinary steamer is 200 days at sea under full speed—and this is a fair estimate for most routes—we find that a steamer of 5000 tons gross, which would be about the measurement of the standard type "A" Hog Island steamer, at 10 knots sea speed, would figure exactly $12,000 per year direct aid. An 8800-tonner standard Shipping Board type would under the same operating conditions bring in about $13,400. The combined passenger and freight steamer of the 535 type running 17½ knots sea speed would be aided by an amount slightly over $144,000 per year, and the Leviathan, if she achieved 23 knots speed at sea, would bring a little better than $1,600,000 per year.

The operating handicap against the ordinary American freighter in foreign trade has been variously estimated at from $5 to $40 a deadweight ton a year. Taking the lower figure, the 5000-ton gross steamer above would require direct and indirect aid to the extent of $35,000 per year in order to place her on an even footing with her foreign competitors. In Pacific Marine Review for February there was published an analysis by a competent consulting engineer which placed the subsidy required per deadweight ton per month, in order to place American vessels on an even basis with foreign competitors even after all adverse legislation had been corrected, at 74 cents per month per deadweight ton, which would mean in the case of the 5000-ton gross vessel above $60,000 per year subsidy. So it is plainly evident that the Shipping Board and its advisors in preparing the rates of their direct aid schedule were very conservative and well within the mark.

The most useful provision in this bill, as we see it, is the making possible of an immediate revolving fund of $125,000,000 to be available at rates of interest not less than 2 per cent for the construction of suitable types of vessels and the conversion of existing steamers to more economical types of propulsive equipment. In this connection the plans for the conversion of existing standard types of Shipping Board steamers to single-screw motorships, which Pacific Marine Review has been publishing from time to time, are of especial interest. Aid of this kind by the Federal government for the motorization of the Shipping Board fleet would be one of the most effective forms of subsidy that could possibly be put into operation.

## PROPOSED FOREIGN LOAN POLICY

THE National Foreign Trade Council has sent a letter to other trade organizations and chambers of commerce throughout the country requesting their co-operation in a plan wihch it believes will assist in reducing unemployment in the United States by providing that part at least of the proceeds of foreign loans floated here shall be spent for the purchase of American products.

The letter calls attention to some recent instances where this policy was not followed, in one of which the borrowers expected to be required to spend part of the loan in the United States; but because they were not so required, are planning to spend in Germany the money borrowed here.

The Council's letter follows:

"I am writing in behalf of the National Foreign Trade Council to request the co-operation of your organization in an effort to secure the adoption by American underwriters of foreign loans of a definite policy under which there will be included in the loan agreement, wherever practical, a stipulation that all or part of the loan proceeds shall be expended for the purchase of American products.

"It is recognized, of course, that not all loans are susceptible of such an agreement, but a tabulation of the foreign loans floated in the United States since January 1, 1920, discloses the fact that in a number of instances in which such a provision might well have been insisted upon by the underwriters, it was not done. The result was that American money has been used for the purchase from our competitors in foreign countries of supplies which would have been purchased in this country had such a provision been made in the loan agreement. The effect upon unemployment in this country is obvious and no argument is needed to show the desirability of inducing the underwriters of foreign loans in this country to insist upon such a provision, wherever practical, as a condition precedent to the making of the loan.

"The study of this matter by the banking committee of the National Foreign Trade Council discloses the fact that it is the settled policy of British and other European banking houses, in making foreign loans, to require the inclusion in the loan agreement of a provision for the expenditure of all or part of the proceeds in the country advancing the funds. So clearly is this policy recognized and understood in Europe that, in some recent notable cases in the United States, European borrowers expressed surprise at not being required to agree to spend at least part of their loan proceeds in the purchase of American products.

"In one especially noteworthy case, after the loan agreement had been executed without this provision, the borrowers admitted that they had been prepared to accept such a stipulation, and had expected to be required to do so. They also admitted that since they had not been bound to expend any part of the loan proceeds in the United States, the funds would be used for the purchase of supplies in Germany.

"The council's committee feels that this is a matter of the greatest importance, which may most appropriately be submitted to your organization with a view to enlisting its support in an effort to bring the subject to the attention of the underwriters of foreign loans in this country, so as to secure the inclusion of such a provision in future loan agreements, except, of course, those for refunding loans and such others as are not susceptible of such a stipulation.

"The National Foreign Trade Council, through its committee on banking, therefore requests the co-operation of your organization in a definite plan which the committee believes will bring about the necessary improvement in this situation. It is suggested that this letter, or a similar statement of the matter, be sent to each of your members requesting them to communicate its substance to their bankers, bondholders and stockholders. Many of them are, no doubt, investors in foreign bonds. If each investor who is considering the purchase of foreign bonds will make it his uniform practice to inquire of the bond salesman or bond house with which he may be in negotiation, whether or not any stipulation was made in the loan agreement for the expenditure of all or part of the loan proceeds in this country, it will very soon become manifest to the underwriters of foreign loans here that such a stipulation has a distinct value as a selling argument in the distribution of the securities, and the desired reform will be quickly accomplished.

"If it is suggested on the part of the underwriters or bond salesmen that the omission of such stipulation is due to competitive conditions, it is only fair to point out that the United States is now practically the only country in the world with capacity to make foreign loans in any considerable amounts, and that the competition of American underwriters for such loans cannot properly be held to justify failure to insist upon a condition so obviously of advantage to the industry and commerce, and therefore to the prosperity, of the whole country.

"The academic suggestion is also made, sometimes, that inasmuch as foreign loans floated here are in fact the importation of foreign securities, they must tend toward restoration of the distorted trade balance, and therefore be helpful, even when all the proceeds are expended in competing markets. It seems hardly necessary to point out, however, that while this argument may be good economic theory, the element of practical benefit provided is so tenuous and remote as to be more than offset by the immediate disadvantage of enabling the use of American dollars to keep foreign competitive enterprise at work, while American industry is stagnant and our own working men are unemployed.

"The National Foreign Trade Council is hopeful that this matter will appeal to your organization, and that your hearty co-operation will be given to the plan here suggested for securing the much needed reform."

## THE SEA SERVICE BUREAU

QUITE a little criticism has recently been directed against the Shipping Board and the employment agencies of the operators of American steamships on account of alleged favoritism to alien seamen. This criticism, largely emanating from certain organized labor sources, maintains that the American seaman is being driven from the sea.

As was shown in our March issue on page 188, statistics prove that these allegations are entirely incorrect. It was there shown that, according to the figures contained in the annual report of the Commissioner of Navigation for the fiscal year ending June 30, 1921, the percentage of Americans shipped during each of the years from 1914 to 1921, inclusive, shows slight variation and, on the whole, a slight increase.

Taking the figures of the Sea Service Bureau of the United States Shipping Board covering fifteen American ports and about 15,000 men, we find that during the fiscal year ending June 30, 1920, 65.7 per cent of the men placed were American; during the fiscal year ending June 30, 1921, 68.8 per cent. During the succeeding five months, for which reports have recently been completed, namely, from July to November, 1921, inclusive, more than 95 per cent of the men placed by the Sea Service Bureau were American citizens.

These reports would seem to prove conclusively that American citizens are more interested in a seafaring life now than they have been at any time during the past seventy-five years, and they prove also that the work of the Sea Service Bureau has been intelligently directed toward the end in view when that bureau was first put into operation.

During the first few months of the operation of the Sea Service Bureau, less than 10 per cent of the men placed were American citizens. The bureau, it will be remembered, carried on at that time not only an employment service, but was also very actively engaged in sea training, and trained and placed on the decks and in the engine rooms of Shipping Board ships many thousands of American boys. It was noticeable during the life of the sea training activities and was used as an argument against those activities when they were discontinued that many of the boys trained would leave sea service at the expiration of one or two trips. The fallacy of that argument and the fact that the call to the sea is still potent in American blood is proved by the fact that many of these one- and two-trip apprentices are now returning and being placed by the Sea Service Bureau.

## THE AMERICAN SOCIETY OF MARINE ENGINEERS

THE American Society of Marine Engineers was organized in San Francisco in July, 1921. The motive for the organization of this society was the desire on the part of marine engineers to avoid affiliation with the American Federation of Labor. The society has made this principle of non-affiliation with organized labor a fundamental basic tenet in its constitution, recognizing the fact that the operating marine engineer, a licensed government official, is entrusted with valuable property and with the maintenance of discipline upon which the safety of that property and also the safety of many lives may depend.

In the emergency of war many licenses were created in excess of normal requirements, and in the majority of cases these war licenses were issued to men who had very little practical training and almost none of the traditional atmosphere which go to make up the best type of marine engineer. The American Society of Marine Engineers is, therefore, picking its personnel with great care. They have established a board of investigation composed of the older responsible engineers, who pass on every applicant, admitting only on the basis of character and fitness. After an application has been favorably passed upon by this board, it is submitted to the members at large at a regular meeting for election.

In conjunction with the regular weekly meetings of the society, a series of lectures has been delivered on subjects connected with the profession of marine engineering. These lectures have elicited a great deal of interest on the part of the members and have been followed by keen general discussion. The subjects so far offered cover a wide range, running from the history of steam propulsion to the design and operation of marine Diesel engines. In addition to these lectures at the regular weekly meetings, the society has arranged for a lecture course on Diesel engine practice and for the publication of a monthly pamphlet incorporating abstracts of all of the lectures so that members at sea may have an opportunity to derive benefit from this educational feature. An excellent library of marine engineering textbooks is maintained at the society's headquarters for use of the members.

Perhaps one of the most valuable contributions which this society is making lies in the work of the auxiliary. Membership in this branch is limited to American citizens who are machinists and who join this organization on account of their desire to perfect themselves in the profession of marine engineering through the educational features of the organization and through practical work at sea. The society aids these unlicensed men in the auxiliary to secure positions on shipboard, encourages them in and provides them with textbooks for study in preparation for examinations for licenses, and gives them free use of its library and entree to the lecture courses. There can be no doubt that constructive work of this kind continued over a period of years will result in a very great improvement in the engineering personnel of the American merchant marine.

The valuable work now being done by the American Society of Marine Engineers as established on the Pacific Coast is attracting the attention of many Eastern shipowners and operators, and a movement is on foot to make the organization national in its scope. This can readily be done with the co-operation of American shipowners, and once done it will be of immense benefit in stabilizing the marine engineering profession and in furthering the interests of the American merchant marine.

The officers of this society recently installed are: president, William J. Brady; vice-president, J. A. Cronin; treasurer, Joseph Barker; executive council, B. S. Free, H. F. Gelhaus, E. W. Tucker, C. L. Grundell, S. Mills, A. E. Moncaster, J. M. Spencer; trustee, E. B. Egbert.

# MARINE FUEL PROBLEM OF THE PACIFIC COAST

## Among the Many Serious Problems Facing the Operator of Both Motorships and Oil-Burning Steamers Future Fuel Supply Takes First Place. Mr. Dorward's Paper Analyzes This Problem for the Pacific Coast in a Masterly Way

By D. DORWARD, JR.*

IN the operation of the American merchant marine there is no one problem more vitally important than the question of fuel, it being the dominant factor attending steamship operation and the largest single item of cost entering into the operating schedule of a vessel.

The greater part part of the fleet of vessels now operating from Pacific Coast ports of the United States use oil as fuel, as with the exception of Australian and Japanese bunkering ports coal supplies for replenishing bunkering stations are brought from very distant points of origin and therefore the cost of bunker coal at foreign stations, and even at Pacific Coast ports, is very high—so much so that even at the present prices ruling for fuel oil the oil fired vessel is the most cheaply operated from a fuel standpoint.

The principal sources of coal for Pacific Coast consumption are Rocky Mountain States, Washington and foreign sources such as British Columbia, Australia, Great Britain, Japan and China, in the order named.

At the present time coal, the dominant solid fuel, and fuel oil are competitors, and there is no question but that serious inroads will be made in the coal industry on account of the superior convenience and efficiency of oil fuel.

On the Pacific Coast of the United States, oil is the principal fuel in use by the merchant marine today, and this paper will therefore deal chiefly with the problem of the future operation of the American merchant marine, particularly from Pacific Coast ports, with oil as fuel and the future supply of oil.

Some of the largest trans-Atlantic passenger liners have already been fitted for fuel oil and others are at present being converted for it has been found that an enormous saving in operating cost has resulted from the change from coal to oil, and all new vessels building or contemplated for this service are being designed for fuel oil burning.

Fuel oil as a source of power is today receiving the closest attention by maritime interests for the world's merchant shipping is now rapidly being converted to fuel oil. The advantages derived from liquid fuel instead of coal are so important, particularly in facilitating bunkering and increasing the steaming radius and conservation of labor on shipboard that undoubtedly there will be a rapid increase in the use of oil as fuel, particularly in view of the highly competitive situation developing between the merchant marines of Great Britain and the United States.

### Use of Oil by World's Shipping

Statistics show that at the beginning of 1920 the world's merchant shipping approximated 55,000,000 tons, of which tonnage approximately 9,000,000 tons is already on an oil burning basis and of which proportion approximately 1,000,000 tons is fitted for Diesel engine drive. This amount of shipping fully employed would occasion a demand for fuel oil annually of approximately 90,000,000 barrels. In 1918 12 per cent of the world's tonnage was fitted to use oil, while in 1920 it has increased to 18 per cent.

### Motorships

The change from coal to oil has been occasioned by two conditions: the conversion of coal burning vessels to an oil burning basis and the construction of motor or Diesel engine driven vessels. The adoption of the internal combustion or Diesel type of propulsive equipment is just beginning to assume important proportions in the United States; but in Great Britain and on the continent of Europe this phase of the development has been and is making rapid strides.

The motor-equipped ship has unquestionably a strong advantage in point of economy over oil-fired steam-equipped vessels; but it is expected that the change from coal to oil as applying on the world's shipping will be greater through the intermediate stage of oil fired steam vessels and this it is expected will create an annual requirement of at least 10,000,000 barrels of fuel oil for each million tons of steam shipping using oil as fuel. Of the vessels in operation under the United States Shipping Board and under private American ownership 49.4 per cent are exclusively oil burners, 23.3 per cent coal burners and 27.3 per cent convertible to burn either coal or oil.

### Marine Fuel Oil Requirements

In 1920 the fuel oil requirements of the United States Shipping Board were in excess of 30,000,000 barrels, and while this demand was somewhat curtailed during the industrial depression of 1920-1921, it is expected that the resumption of international trade will not only revive but intensify the demand.

### Navy Requirements

The navies of the world are largely on an oil-burning basis, for the advantages of oil over coal for naval operations are of the utmost importance and undeniably make for greater efficiency. While the naval demand for fuel oil is small in comparison with that required by the merchant marine shipping, there are, however, about 5,000,000 barrels required annually for the American Navy.

It is now more than evident that oil as fuel for merchant marine has assumed a standing of the utmost importance and it has been conceded by well known authorities that the strength of this demand is such that if necessary it can and will divert from industrial purposes the quantity required for shipping interests. At any rate, the significance of oil in maritime matters explains to a considerable extent the present world-wide interest that has been shown in oil. Particularly Great Britain has by her policy in acquiring foreign reservations of petroleum, indicated beyond question the great advantage of fuel oil for naval operations and ocean transportation. These factors have also been the cause of much activity in the United States.

In the use of fuel oil on board vessels there are many economical features involved which would make the continuance of the use of oil as a fuel for maritime purposes of the greatest importance. These are briefly summarized as follows:

More economical operation.

Reduced crew.

Greater cargo capacity of the vessel account its ability to carry oil in compartments not otherwise available for cargo, such as double bottoms, peak tanks, etc.

Ability of vessel's propulsive equipment to render more continuous service, steady steaming and uniform speed, thereby tending for more efficient operation.

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* Paper read before the San Francisco Section of the American Society of Mechanical Engineers, February 23, 1922.

Lessened wear and tear on vessel's equipment, machinery, boilers, and reduced cost of upkeep.

Less frequent painting.

Preserving effect of oil on vessel's double bottom, it being rarely ever necessary to undertake the most expensive item of renewing tank tops in oil burning vessels.

On large passenger vessels fitted for oil fuel it has been noted that an enormous saving in operating costs has been effected on account of lessened wear and tear on such items as carpets, draperies and cabin equipment.

### World Supply

The great problem confronting steamship operators today is the question as to whether the world's supply of petroleum is sufficient to sustain automotive transportation on land, industrial power plants, lubrication requirements of industry, and whether the supply will support the great change in the conversion of ocean shipping to an oil burning basis.

Were the 55,000,000 tons of world's ocean shipping converted to an oil burning basis, it would require an annual consumption of over 500,000,000 barrels of oil. This represents nearly the total quantity of petroleum produced in the world today. While this could, of course, be greatly reduced by a more universal adoption of Diesel engines, even then the total oil consumption would still be of huge proportions.

Utilization of oil by ocean shipping, however, is today governed largely by the matter of price. As the production of the world's most extensive deposits becomes exhausted it is probable that rising prices will force a reduction in the amount of fuel oil used for maritime purposes. This possibility seems to have been lost sight of under the existing competitive conditions and on account of the great advantages offered by the use of fuel oil at the present price level. Regardless of the future of fuel oil, the fact remains that it is now definitely involved in competitive shipping efforts and its use is fully expected to grow for a considerable period at least.

### Coal Being Substituted

Coal has recently been substituted for fuel oil in the northwest states to the extent of over 1,000,000 barrels of oil annually, particularly in cement plants, railroads, industrial plants and power stations. Powdered coal is still in an experimental stage and it is questionable if its use on board vessels could be attended with any degree of success. It is expected, however, that the development of automatic stokers for use on shipboard will aid materially in the continued use of coal for marine purposes.

California being the principal source of supply for fuel oil for the entire Pacific Coast, its exports of this commodity radiate to all centers for many purposes, for California fuel oil operates the Panama Canal; the greater part of the steam railroads of Washington, Oregon, California, Nevada, Utah, Arizona and New Mexico; the steamship lines of the Pacific Coast from Chile to Alaska, and across the ocean to Hawaii, Australia and the Orient; the artificial gas plants of the Pacific Coast states; mines and smelters of California, Nevada and Arizona; the cement plants and sugar refineries of California, and a substantial portion of the manufacturing, industrial and agricultural enterprises of the Pacific Coast states of the Union. California fuel oil supplies the fuel oil requirements of the United States Pacific Navy and Army and of the various Pacific states and municipal governments.

Radiating from California north, west and south, California fuel oil to a considerable extent operates the railroads and industries of western Canada and the railroads, steamship lines, mines and smelters of the West Coast of South America.

### Oil Tankers

Huge quantities of crude oil are imported from Mexico to the United States. In 1920 approximately 180,000,000 barrels of crude petroleum were mover overseas, of which 106,000,000 barrels, or 59 per cent, represented shipments from Mexico to this country. As indicative of the enormous volume of the movement of fuel oil, the vast increase in tanker tonnage in recent years is of considerable interest. For ocean transport the oil tanker represents the most efficient agency for carrying petroleum, and in recent years with the development of the oil fields of the Gulf Coast and Mexico many tank steamers have been built and are now in use.

The tanker tonnage of the world today is nearly 10 per cent of the total merchant tonnage. In 1913 there were a total of 335 oil tankers, of a total deadweight tonnage of 2,156,987 tons, of which fifty-two tankers were of American registry. In 1921 there were a total of 915 tankers of a total deadweight tonnage of 7,554,724 tons, of which 403 were of American registry. The average tank steamer is of approximately 10,000 tons deadweight capacity.

### Other Fuel Sources

The consumers of petroleum oil are now facing a condition of decreasing production and increasing demand, and this condition points inevitably to the necessity of developing other sources of fuel for power.

Hydro-electric plants can aid materially in the conservation of fuel oil in the power they produce, but industrial plants, railroads and similar institutions will eventually have to find other sources of power than that developed by fuel oil, in order to supply the increasing demand for marine purposes, and of the substitute fuels coal will undoubtedly occupy the chief position.

Even at this stage it is significant that coal is now being brought from Australian ports in American vessels using oil as fuel; and large steamship companies having many vessels usually confine that portion of their fleet operating in Pacific Coast waters to those vessels fitted for oil burning.

Approximately 60 per cent of the crude oil produced in California is refined, at least in part, before being utilized. The increased demand for gasoline and lubricants and the rapid strides in refinery efficiency are resulting in the refining of a constantly increasing proportion of the oil with a resultant smaller quantity available for fuel purposes. Practically 50 per cent covers oil exports to the Orient from California ports though these exports are confined mostly to fuel oil to Hawaii, Central and South America, gasoline and distillate to Australia, and kerosene to the Far East. The demand for refined oil products is rapidly increasing and will be accelerated by the potential oil shortage in other fields of the United States and by the necessity of using California oils to offset this shortage.

### Available Supply

To meet this increasing demand, California oil must be used more efficiently and sparingly.

California now produces between one-quarter and one-fifth of the world's supply of petroleum oils and one-third of the United States' supply.

The portion of the petroleum sources of the United States of greatest interest is that portion not yet produced, for the unmined supply must support the future. With the growth of geological knowledge regarding the character and location of oil-bearing formations, attention is naturally attracted to estimates of the oil underground. In 1908 the United States Geological Survey calculated the total quantity of oil originally available in the United States as ranging between a minimum of 10,000,000 barrels and a maximum of 24,500,000,000 barrels; and as a comparison it should be noted that the present actual annual requirements are slightly over 500,000,000 barrels.

In 1915 a revised inventory placed the original supply at approximately 9.1 billion barrels and a third estimate made by the United States Geologists in 1916 placed the original supply at 11.2 billion barrels. In 1918 a recalculation by the Geological Survey reached the conclusion that the original supply of oil available was 11.3 billion barrels.

While such calculations can only be regarded as approximations, and while the percentage of error may be very high, the important point to be considered is the limitation or smallness of the domestic reserves upon which we will be dependent. Statistics show that to January 1, 1921, the United States had produced 5.4 billion barrels; and subtracting this quantity from the original estimated supply of 11.3 billion barrels would leave as a working reserve only 5.9 billion barrels, with the annual requirements running over 500,000,000 barrels.

The production of crude petroleum in the United States has been growing rapidly, but the consumption since 1915 has been increasing still more rapidly. Taking the unit number of 100 for both the production and consumption for 1913, we find that in 1920 the unit number of production was 178 and the consumption 204. It thus appears that from 1913 to 1920 American production increased 78 per cent and that during the same period consumption advanced 104 per cent. Fortunately, imports from Mexico during this time have supplied the shortage.

Statistics also show that of the petroleum produced in 1917 a total of 48.4 per cent was available for fuel purposes, whereas in 1920 the amount available for fuel was reduced to 44.6 per cent.

Important strides have been made in refinery efficiency; also in number of refineries. The refining capacity of the entire country increased 18 per cent during 1919 and 23 per cent in 1920. This increase in refinery capacity, together with greater efficiency, will certainly have the effect of reducing the quantity of oil available as fuel.

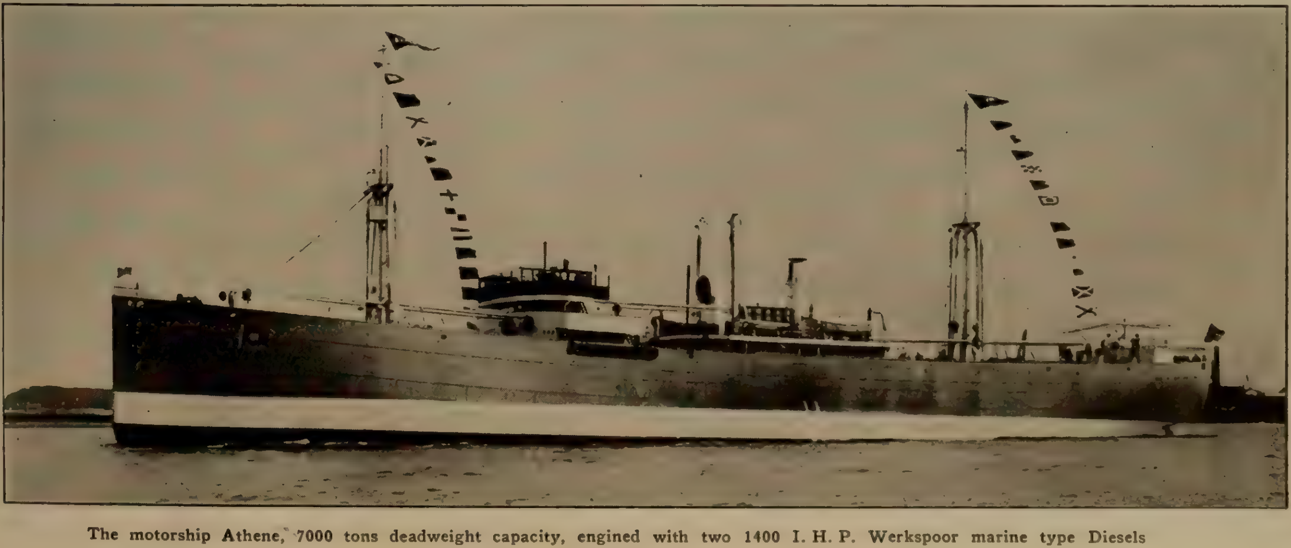
It is a fact, therefore, that petroleum cannot be expected to radically displace coal in industry and transportation, since a crude petroleum production of about 3,000,000,000 barrels per year would be necessary to drive coal from its present position.

For the future, fuel oil will represent a reducing percentage of the crude petroleum produced, for the more specialized uses, such as automotive power, lubricants and chemical by-products, are coming into more importance and must be considered in preference to the demand for industrial fuel. However, fuel in liquid or gaseous forms is of such importance and has so many advantages in convenience and efficiency that it may reasonably be expected to continue to supplant solid fuels, and solid fuels must take second place as regards certain industrial uses and marine propulsion.

The output of crude petroleum in the United States is conceded to have virtually reached its maximum and the proven fields of Mexico are showing a rapid decline and a marked falling off in imports from that source may be expected.

Cheap supplies of petroleum will soon be a thing of the past; and the answer to the domestic petroleum problem does not lie in importations from foreign sources.

Efficiency in production and utilization and supplemental sources of supply at home must share with foreign supplies the responsibility of sustaining those activities exclusively dependent upon liquid fuel, of which none is more important than the merchant marine.



The motorship Athene, 7000 tons deadweight capacity, engined with two 1400 I. H. P. Werkspoor marine type Diesels

# "THE MERCHANT MARINE ACT, 1922"

## Herewith for the Convenience of Pacific Marine Review Readers Complete Text of the So-Called Subsidy Act. The Running Comment Interpolated is from a Recent Address on this Act by Albert D. Lasker, Chairman of the Shipping Board

### TITLE I—DEFINITIONS

Sec. 101. This act may be cited as the "Merchant Marine Act, 1922."

Sec. 102. The terms "person", "vessel", "documented under the laws of the United States" and "citizen of the United States" shall have the meaning assigned to them by Sections 1 and 2 of the Shipping Act of 1916, as amended by the Merchant Marine Act, 1920.

The term "foreign trade" means trade between any ports not included in the coastwise trade of the United States and not including trade upon the Great Lakes, and not including trade between ports in the United States and ports in foreign countries where the distance between the vessel's last port of call in the one and the vessel's first port of call in the other is less than one hundred and fifty miles; provided, that trade between the United States and the Philippine Islands and between the United States and the Virgin Islands shall be considered foreign trade, whether covered by the coastwise laws or not.

The term "direct foreign trade" means foreign trade where one of the ports is a port of the United States or its possessions.

The term "indirect foreign trade" means foreign trade where neither of the ports is a port of the United States or its possessions.

The term "board" means "United States Shipping Board".

The term "commission" means the "Interstate Commerce Commission."

There are many who believe that indirect aids alone should inure. I am of those who hold the firm conviction that, if the President could have seen his way clear to abrogate those sections of our commercial treaties which forbade preferential tariffs, the enforcement of Section 34 of the Jones Act would have done more for the establishment of the American merchant marine than possibly any other aid that could have been given, but in the carrying out of our international relations the President, concurring with President Wilson, did not consider this in the national interest. Without the aid afforded by Section 34 in preferential tariffs, the other indirect aids of the Jones Act were not deemed to be sufficient to bring about profitable operation of American flag ships, and concurrently with his decision not to abrogate the treaties the President apprized the Shipping Board of his desire that they make a study of all forms of aid that would bring about the needed help. The Shipping Board first devoted its attention to various forms of indirect aid.

It is not proposed at this time to enter into such changes as might be needed in our navigation laws. That is a subject of itself, but I believe that I can speak with authority when I say that the spokesman of sea labor feels that there are certain much complained-of provisions in our navigation laws which in due course should be modified.

### TITLE II—AMENDMENTS TO THE MERCHANT MARINE ACT, 1920

Sec. 201. That Section 5 of the Merchant Marine Act, 1920, is hereby amended to read as follows:

"Sec. 5. That in order to accomplish the declared purposes of this act, and to carry out the policy declared in Section 1 hereof, the board is authorized and directed to sell, as soon as practicable, consistent with good business methods and the objects and purposes to be attained by this act, at public or private sale after appraisement and due advertisement, to persons who are citizens of the United States except as provided in Section 6 of this act, all of the vessels referred to in Section 4 of this act or otherwise acquired by the board; provided, that any vessel may be sold without advertisement, if such sale is specifically authorized by the board upon an affirmative vote of not less than five of its members, spread upon the minutes of the board; and it shall make as a part of its records a full statement of its reasons for making such sale. Such sale shall be made at such prices and on such terms and conditions as the board may prescribe, but the completion of the payment of the purchase price and interest shall not be deferred more than fifteen years after the making of the contract of sale; nor shall the interest be at less than 2 per cent per annum.

"All sales made under the authority of this act shall be subject to the limitations and restrictions of Section 9 of the 'Shipping Act, 1916', as amended."

It is proposed that the Shipping Board sell its fleet at world prices so that its ships which pass into private hands will not in capital account stand the purchaser more than foreign-owned ships of similar type. Save for the twenty-three so-called 535 and 502-foot combination and passenger cargo ships, and the ex-Germans, of which maybe ten or twelve are prime ships, the Shipping Board is possessed only of cargo tonnage. Therefore in any large measure the government sale of its ships at market prices cannot meet the needs of passenger carriage, but when it comes to standard freighters the government is possessed of an ample fleet to meet any needs for years to come.

Sec. 202. Section 11 of the Merchant Marine Act, 1920, is hereby amended to read as follows:

"Sec. 11. That the board may set aside out of the revenues from sales and operations a sum not exceeding $125,000,000, to be known as its construction loan fund.

"The board may use such fund to the extent required by making loans upon such terms as the board may prescribe to aid persons, citizens of the United States: (a) in the construction of vessels of the best and most efficient type equipped with the most modern, the most efficient and the most economical machinery and commercial appliances; or, (b) in the equipment of vessels already built with machinery and commercial appliances of the type and kind mentioned.

"No loan shall be for a greater sum than two-thirds of the cost of the vessel to be constructed or of the value of the vessel when thus re-equipped, nor shall any loan be made at a rate of interest less than 2 per cent per annum.

"The board shall require such security, including a first lien upon the entire interest in the vessel or vessels with reference to which the loans are made, as it shall deem necessary to insure the repayment of the sum loaned with the interest thereon."

### Construction Fund

Under the present Jones Act the Shipping Board is empowered to create, out of the sale of its assets, a fund of $125,000,000, at the rate of $25,000,000 a year. We should have had in the fund by this time some $50,000,000, but the Shipping Board has been able to use all the moneys it has received from liquidation and all that it could get from any other souces, and there are no moneys in that fund. We are asking Congress to give us the right to get the $125,000,000 out of liquidation within the shortest period possible and not at the rate of $25,000,000 a year. We are further asking that we have the right to loan this money at not less than 2 per cent interest, as Britain did, for instance, in the case of the Mauretania and Lusitania. We are, therefore, not asking for any additional appropriation in the $125,000,000: we are merely asking that we be permitted to expedite realization, so that the fund may be made free for use by American shipowners in giving work to American shipyards at this particular time, when it is so sorely needed.

Sec. 203. Section 23 of the Merchant Marine Act, 1920, is hereby amended to read as follows:

"Sec. 23. That the owner of a vessel documented under the laws of the United States and operated in foreign trade shall, for each of the ten taxable years while so operated, beginning with the first taxable year ending after the enactment of this act, be allowed as a deduction for the purpose of ascertaining his net income subject to the war-profits and excess-profits taxes imposed by Title III of the Revenue Act of 1918 or any and all taxes on income, corporate or individual, imposed by the Revenue Act of 1921, or by any subsequent revenue act, an amount equivalent to the net earnings of such vessel during such taxable year, determined in accordance with rules and regulations to be made by the board: provided, that such owner shall not be entitled to such deduction unless he invests or sets aside in a trust fund for investment, within a time to be fixed and under rules and regulations to be made by the board, in the building, in shipyards in the United States, of new vessels to be documented under the laws of the United States, and to be of a type and kind approved by the board, an amount, to be determined by the Secretary of the Treasury and certified by him to the board, equivalent to the war-profits, excess profits and income taxes that would have been payable by such owner on account of the net earnings of such vessels but for the deduction allowed under the provisions of this section: provided, further, that the rate of taxation to be thus applied in the case of an individual owner shall be the same as in the case of a corporation owner and that the amount of taxes from which the individual owner is relieved under the provisions of this section shall in no case exceed the relief which would be afforded thereby to a corporation owner: provided, further, that at least one-half of the cost of any vessel constructed under this paragraph shall be paid for out of the ordinary funds or capital of the person having such vessel constructed.

"That during the period of ten years from the enactment of this act any person a citizen of the United States who may sell a vessel documented under the laws of the United States and built prior to January 1, 1914, shall be exempt from all income taxes that would be payable upon any of the proceeds of such sale under Title I, Title II and Title III of the Revenue Act: provided, that such owner shall not be entitled to such exemption unless he invests or sets aside in a trust fund for investment, within a time to be fixed and under rules and regulations to be made by the board, in the building, in shipyards in the United States, of new vessels to be documented under the laws of the United States and to be of a type and kind approved by the board."

### TITLE III—PROVISIONS RELATING TO REVENUE LAWS

Sec. 301. That in determining the amount due by a person as a tax imposed by Titles I, II and III, or either of them, of the Revenue Act of 1921, or as a tax on income, corporate or individual, imposed by any subsequent revenue act, there shall, beginning with the first taxable year ending after the passage of this act, be deducted from the amount which would otherwise constitute the tax, a sum equal to 5 per cent of ocean freight money properly chargeable to and which has been paid by the person subject to the tax, during the taxable year involved, for the transportation of goods or property of any kind, when such transportation has been in a vessel documented under the laws of the United States, in either direction between a port in the United States or its possessions and a port in a foreign country. The amount which may be thus deducted shall be ascertained and determined in accordance with rules and regulations to be made by the United States Shipping Board and approved by the Secretary of the Treasury.

Sec. 302. The United States Shipping Board is hereby authorized and directed, in co-operation with the Secretary of the Treasury, to make rules and regulations for determining the net earnings subject to the taxes imposed by Title I, Title II and Title III of the Revenue Act of 1918, or any other and all taxes on income, corporate or individual, imposed by the Revenue Act of 1921 or by any subsequent revenue act, when the net earnings to be ascertained are of a vessel documented under the laws of the United States, which rules and regulations shall be applied by the Treasury Department in determining such net earnings. In addition to the allowance for depreciation due to exhaustion, wear and tear and obsolescence, allowance may be made in the case of vessels acquired prior to January 1, 1921, for the exceptional depreciation in values of shipping since that date.

Sec. 303. All tonnage duties, taxes or fees imposed on vessels entering ports of continental United States by an act entitled "An Act to provide revenue, equalize duties and encourage the industry of the United States, and for other purposes", approved August 5, 1909, and by any other act of Congress, are hereby increased so that the amount of such tonnage, or duties, taxes and fees to be hereafter imposed on such vessels shall be double the rate in each case, respectively, at present imposed by law: provided, that no such duty, tax or fee imposed on a vessel engaged in coastwise trade or in trade with the Philippine Islands shall be increased or otherwise affected by the provisions of this section.

## Shippers' Rebate

The thought is that 5 per cent of all freight moneys shall be deductible from income and corporation taxes if such freight moneys have been paid, inbound or outbound, to American ships.

This provision was proposed by the Shipping Board to the President, and by the President to the Congress, in lieu of the benefits that were to have accrued to American shippers from Section 34. It was proposed to take the place of those benefits, and while it will not cost the Treasury as much as the enforcement of Section 34, there are many who believe that it will accomplish in a learge measure what Section 34 would have accomplished, in that its benefits will flow, as the chairman pointed out, to every shipper in the United States; to the farmer and to the manufacturer, as well as to the importer and exporter; thus giving a preference, because it is profitable, to American shippers and insuring to American ships full cargoes, and we all know that full cargoes are really the greatest aid to profitable operation.

### TITLE IV—PROVISIONS AFFECTING IMMIGRATION

Sec. 401. (a) Whenever 50 per cent of the number of aliens of any nationality who may be admissible in any one year under the immigration laws shall have been transported to the United States from foreign ports in vessels not documented under the laws of the United States, and shall have been duly admitted, no more of such aliens shall be admitted to the United States unless they shall have been transported to the United States from foreign ports, other than ports in foreign contiguous territory, in vessels documented under the laws of the United States: provided, that whenever the United States Shipping Board shall determine that adequate facilities for the transportation of immigrants from any foreign country are not afforded by vessels documented under the laws of the United States, it may certify its determination to the Secretary of Labor, and thereafter the percentage hereinbefore provided shall be increased to whatever percentage, up to 100 per cent, may be specified in said certificate of the United States Shipping Board: provided, further, that whenever a nation possesses no vessels engaged in the transportation of immigrants from such country to the United States, the United States Shipping Board may certify this fact to the Secretary of Labor, and thereafter the percentage hereinbefore provided shall be reduced to whatever percentage may be specified in said certificate of the United States Shipping Board.

(b) No alien who shall have been transported to the United States by water shall be admitted as an immigrant into the United States without a consular certificate which shall specify that it shall be valid only if the person named therein shall have been transported to the United States in a foreign vessel or in a vessel documented under the laws of the United States, as the certificate may provide. Such certificate shall be issued by the consular agents of the United States in such a manner that not more than 10 per cent of the number of aliens of any nationality, who may be admissible under the immigration laws, shall receive such consular certificates in any one month. As nearly as possible one-half of such certificates issued each month shall specify that they are valid only if the person named therein shall have been transported to the United States either in a foreign vessel or in a vessel documented under the laws of the United States, and one-half thereof shall specify that they are valid only if the person named therein shall have been transported to the United States in a vessel documented under the laws of the United States; provided, that in any case where the United States Shipping Board shall have fixed a percentage as provided in paragraph (a) hereof, such certificates shall be issued so as to correspond to the percentage so fixed: provided, further, that whenever the total number of immigrants of any nationality, admissible into the United States under the immigration laws in any fiscal year, shall be less than 3000, the commissioner general of immigration, with the approval of the Secretary of Labor, may, in his discretion, permit the admission of the total number of aliens of such nationality who are admissible in that fiscal year at such rate per month as he may prescribe, not, however, to exceed 500 in any one month, anything in the immigration laws of the United States to the contrary notwithstanding, and consular certificates shall thereupon be issued at the rate per month provided in the certificate so issued by the commissioner general of immigration.

(c) The Secretary of Labor, with the aid of the Department of State, shall provide at ports of embarkation for the primary inspection of all immigrants seeking to be transported in vessels of the United States to the United States, for the purpose of determining whether or not said immigrant is entitled to apply for admission, and if so, whether he is clearly and beyond doubt entitled to land.

(d) The Secretary of State, the Secretary of Labor and the United States Shipping Board shall jointly prescribe rules and regulations necessary to carry out the provisions of this section.

(e) It shall be unlawful for any person, including any transportation company or the owner, master, agent or consignee of any vessel, to bring to the United States any alien not admissible under the terms of this section and the Secretary of Labor is hereby authorized in his discretion to impose a penalty upon the offending person of not to exceed two hundred dollars for each alien so brought, which penalty may be collected in the same manner as other penalties provided for by the immigration laws of the United States.

## Immigration

The next indirect proposal is that there inure to American-flag ships 50 per cent of the immigrant traffic from countries having a merchant marine, and 100 per cent from countries having no merchant marine—100 per cent from Poland, Czecho-Slovakia and such countries; 50 per cent from the maritime nations, such as Britain, Norway and the like. If, when immigration had been at its flood tide, when we reached the peak of immigration of 1,400,000 people per year, 50 per cent of that number had inured by law to American-flag ships, we would not have been in as sorry a plight as we were in 1914, when we had but fifteen ocean-going passenger ships, while Great Britain possessed 250. Without any other form of government aid we would have had in the North Atlantic a fleet of passenger ships somewhat comparable to Great Britain's, and the Shipping Board believes that so far as third-class passenger ships, at least, are concerned, the provisions asked for will insure the profitable operation of this type in the trans-Atlantic trade.

The Shipping Board believes that the two features of income tax deduction and immigration on American ships are as important as the direct subsidy itself.

### TITLE V—MERCHANT MARINE NAVAL RESERVE

Sec. 501. (a) The Merchant Marine Naval Reserve is hereby established; it shall be a component part of any naval reserve that may exist in the United States Navy; it shall be composed of citizens of the United States who are employed for a major portion of their time on board merchant vessels of the United States, and who, by appointment or enlistment therein, under regulations prescribed by the Secretary of the Navy, approved by the United States Shipping Board, obligate themselves to serve in merchant vessels acting as naval auxiliaries in time of war or during the existence of a national emergency declared by the President. Membership shall be voluntary; it may be by appointment, by enlistment for a term of four years, or by transfer from the Navy or other classes of the Naval Reserve. There shall be no examination for admission beyond inquiry into the applicant's eligibility, his physical and moral fitness, and his experience in the mercantile marine.

(b) The Secretary of the Navy shall prescribe all necessary and proper regulations, not inconsistent with the provisions of this section, for the organization, administration and mobilization of the Merchant Marine Naval Reserve.

(c) Members on their own application may be assigned, in the discretion of the Secretary of the Navy, for active duty on a vessel of the United States Navy in time of peace.

(d) Members in good standing shall receive as compensation per year, apart from pay received as an officer or one of the crew of the merchant ship, an amount equal to one month's base pay of the corresponding rank or rating in the regular Navy. Payment shall be made by the Navy Department, provided funds equal in amount shall have first been transferred to the Navy Department from the United States Shipping Board; that board is hereby authorized in its discretion to make such transfer of funds from the merchant marine fund created by Section 703 of this act, but in no event shall the amount transferred for this purpose exceed $3,000,000 in any one fiscal year.

(e) The Secretary of the Navy shall prescribe a suitable pennant which may be finown as an emblem of the Merchant Marine Naval Reserve on any sea-going merchant vessel documented under the laws of the United States, of more than 1500 gross tons registered: provided, such vessels be first designated by the Secretary of the Navy as suitable for service as naval auxiliaries in time of war: provided, further, that the master or commanding officer and not less than 25 per cent of the officers and 10 per cent of the crew are members of one or another branch of the Naval Reserve; and provided, further, that such flag or pennant shall not be flown in lieu of the national ensign.

### Naval Reserve

The Naval Reserve contemplated will cost about $650,000 the first year, will reach a maximum of $3,000,000, and provides, if I remember correctly, for 30,000 men who will receive an annual retainer of one month's pay of their naval rating. We saw, when we went to war in 1917, the need of boys trained for the merchant marine. This provision in the law would be the greatest insurance that the expense entailed in our last war would not for this item be entailed to any such degree the next time.

### TITLE VI—ARMY AND NAVY TRANSPORT

Sec. 601. The President is hereby authorized and empowered, whenever in his judgment adequate transportation facilities to meet any or all of the needs of the Army and Navy are afforded by vessels documented under the laws of the United States, to direct the discontinuance in whole or in part of the transport service of either the Army or Navy and to transfer to the United States Shipping Board any or all of the vessels now or hereafter engaged in either of such services. Whenever such transfer shall be made, the Secretary of War and the Secretary of the Navy, respectively, are authorized and directed to enter into contracts, approved by the United States Shipping Board, with owners of vessels documented under the laws of the United States, for such transportation as may be required by the Army or the Navy, respectively. Such contracts may be for a term of ten years. The unexpended balance of any appropriations for the Army or Navy transport service, respectively, may be used to meet the payments required under such contracts.

A section on which we will all be in agreement: that officials traveling on business for America should travel on American-flag ships. Since I have been in Washington I have been greatly distressed (without commenting adversely on some of my intimate friends who have been guilty) to see high government officers going on official business to, say, Italy or France, travel on Italian or French ships, as a compliment, they said, to the Italian or French government, but I have never heard of an Italian or French official traveling on American ships out of compliment to America. It is a thing of no great importance, standing by itself, but of the greatest importance when analyzed, because it resolves itself into national consciousness of the need of support of American ships.

It is provided in the proposed law that the army and navy transports be discontinued and that that patronage inure to private ships. For peace-time purposes this will result in a positive saving to the public treasury. The War Department figures no capital charge on its ships; it does not even figure the money invested. I believe if real figures of the cost of government carriage by the army and navy could have been kept, they would have proved that it could be done much cheaper in privately-owned ships, while at the same time giving to those privately-owned ships a volume of trade which with the other aids should insure, particularly in the Pacific, that the American flag would hold the proud place it deserves.

Section 21 of the Jones Act provided for bringing the Philippines under the coastwise restrictions, and will undoubtedly, to my mind, be put into effect at a near date. One hears objections to the enforcement of Section 21, as to the ill-effects thereof on the Philippines. Those same objections were voiced when Hawaii and Porto Rico were about to be declared coastwise. Not one word nor one syllable has changed in the arguments that are brought as to why the Philippines should not be made coastwise. Since the enforcement of that coastwise law in Hawaii and Porto Rico, Hawaii and Porto Rico have prospered as they have never prospered before. The history of these islands under coastwise laws give the lie to those who would make a case against the enforcement of Section 21 toward the Philippines. And everything that is proposed to be done for American ships meets with the same kind of false propaganda as we hear on Section 21.

There is no use for those of us who are interested in foreign-flag ships, or those of us who are interested in American-flag ships, or those of us who are interested in both types of ships, trying to fool ourselves, or trying to fool each other that we can fool ourselves. We all know, all of us in this room, that everything that can be done to prevent the establishment of an American merchant marine will be done by those interested in foreign-flag ships, and not only this will be done but this always has been done. I say this not in criticism of the foreigner's right in protecting a trade that means so much to him, but as

**Americans we cannot be deceived by it and we know the foreigner would not do it if he did not know that it was potentially possible for America to have a merchant marine and that we ought to have it.**

**Section 28, providing for preferential rail rates on through shipments by American ships, is now a part of the law of the land. The Shipping Board is making an intensive study as to whether the adequate facilities required by the law are in existence, and on the ascertainment where and if such adequate facilities exist, the Shipping Board will certify to that effect to the Interstate Commerce Commission, whose duty it is in turn to enforce the law. These are the indirect aids proposed.**

### TITLE VII—COMPENSATION TO VESSELS OF THE UNITED STATES

Sec. 701. (a) In order to aid the development and maintenance of the American merchant marine, to promote the growth of the foreign commerce of the United States, to contribute to the national defense and to carry out the policies set forth in Section 1 of the Merchant Marine Act, 1920, the United States Shipping Board is hereby authorized and directed to pay, as hereinafter provided, out of any moneys in the merchant marine fund created under the provisions of Section 703 of this act, to the owner of every sail or power-driven vessel of 1500 gross tons or more, documented under the laws of the United States and operated in foreign trade, if such owner is a citizen of the United States, the amounts calculated as hereinafter provided, as compensation for each such vessel. Such amounts shall be calculated on the basic rate for each such vessel, regardless of speed, of one-half of one cent for each gross ton of such vessel, for each 100 nautical miles traveled by such vessel.

(b) Whenever any such power-driven vessel is capable of making a speed of 13 knots or over, when on light draught, the amounts payable with respect to such vessel shall be calculated as follows:

(1) When the speed is 13 knots or over, but less than 14 knots, two-tenths of one cent for each gross ton of the vessel for each 100 nautical miles traveled shall be added to the basic rate hereinbefore provided. When the speed is 14 knots or over, but less than 15 knots, three-tenths of one cent shall be added to such basic rate. When the speed is 15 knots or over, but less than 16 knots, four-tenths of one cent shall be added to such basic rate. When the speed is 16 knots or over, but less than 17 knots, five-tenths of one cent shall be added to such basic rate. When the speed is 17 knots or over, but less than 18 knots, seven-tenths of one cent shall be added to such basic rate. When the speed is 18 knots or over, but less than 19 knots, nine-tenths of one cent shall be added to such basic rate. When the speed is 19 knots or over, but less than 20 knots, one and one-tenth cents shall be added to such basic rate. When it is 20 knots or over, but less than 21 knots, one and three-tenths cents shall be added to such basic rate. When it is 21 knots or over, but less than 22 knots, one and five-tenths cents shall be added to such basic rate. When the speed is 22 knots or over, but less than 23 knots, one and eight-tenths cents shall be added to such basic rate. When the speed is 23 knots or over, two and one-tenth cents shall be added to such basic rate hereinbefore provided.

(2) The speed of a vessel for the purpose of determining the additional compensation above provided shall be ascertained at reasonable intervals and by such methods as may be provided by rules and regulations made from time to time by the United States Shipping Board.

(c) Any power-driven vessel of 5000 tons gross or less, but exceeding 1500 tons gross, shall receive compensation under this act as if such vessel were in fact 5000 tons gross.

(d) The mileage upon which compensation hereunder shall be paid, both for sailing vessels and power-driven vessels, shall be determined regardless of the vessel's log, solely by the distances of the direct customary routes for vessels between the ports cleared and entered by such vessels, based on tables of such distances approved or published by the United States Shipping Board.

(e) No vessel shall be entitled to compensation under this act except for mileage covered while operated in direct foreign trade: provided, however, that any vessel engaging in indirect foreign trade, which shall transport passengers or property to or from a port of continental United States at intervals not greater than twelve months, shall also receive compensation for mileage covered in any indirect foreign trade in which she may have in the meantime engaged: provided, further, that a vessel, documented under the laws of the United States, operating between foreign ports primarily to gather cargo for delivery to vessels documented under the laws of the United States and engaged in direct foreign trade, shall, notwithstanding such vessel may never operate to or from a port in continental United States, be entitled to compensation under and subject to all the provisions of this act, for mileage covered by such vessel on any voyage with respect to which not less than one-half the total in bulk of all cargo transported for any part of such voyage, shall be goods either received from or to be delivered to such vessel engaged in direct foreign trade.

(f) No vessel shall be entitled to compensation under this act for mileage covered on any voyage or any part of which one-half or more of the bulk of her cargo belongs to a person who owns not less one-half the vessel or one-half the stock of the corporation which owns such vessels, unless substantially one-third of the cargo capacity of such vessel, either by weight or measurement, has been open to contract for its use on such voyage, as a common carrier at reasonable rates of freight for shipments suitable to the vessel and to the trip, down to a date not less than ten days prior to date of her departure on the voyage involved.

(g) No vessel shall be entitled to compensation under this act for mileage covered through any period of time during which the vessel is not maintained at the highest classification fixed by the Ameriman Bureau of Shipping.

(h) No vessel shall be entitled to or receive compensation under this act unless such vessel is documented under the laws of the United States on the date this act takes effect; or, unless such vessel be thereafter built in the United States: provided, that any vessel built in the United States and undocumented on the date this act takes effect shall, if it is not thereafter documented under the laws of any foreign country, be entitled to receive compensation under this act from the time when it shall have been documented under the laws of the United States; and provided, further, that no foreign-built vessel transferred to American registry after the passage of this act shall be entitled to receive compensation thereunder unless the United States Shipping Board shall by resolution entered of record, in which not less than five members of the board must concur and in which the board shall state the reason therefor, determine that such vessel is, by reason of its special size, speed, type or kind, essential to the proper development of the American merchant marine; and thereupon such vessel shall be admitted to the benefits of the provisions of this act and to the payments herein provided.

(i) After three years from the date when this act takes effect, no person shall be entitled to compensation thereunder unless 75 per cent or more of the total gross tonnage owned directly or indirectly or operated by him, whether as owner, charterer or agent, in the foreign trade, shall be vessels documented under the laws of the United States: provided, however, that the United States Shipping Board may suspend for a time and from time to time the provisions of this paragraph in favor of persons who desire to own, charter or operate power-driven vessels of a particular type or kind, when it appears to the board that vessels of such type or kind, documented under the laws of the United States, are not reasonably available for the purposes desired.

Sec. 702. (a) That no vessel shall be entitled to compensation under the provisions of this act unless the owner of such vessel shall have entered into a contract therefor, as herein provided. The United States Shipping Board is hereby authorized, in behalf of the United States, to contract in writing for a period not exceeding ten years from the date when the contract is made, with the owner of any vessel entitled to such payment, that the payment provided for in this act will be made throughout the period of the contract, subject to all conditions and provisions of this act; provided, such owner contracts on his part as follows:

(1) That the vessel may be taken and purchased or used by the United States for the national defense or for any public purpose at any time; in that event the owner or owners shall be paid the fair actual value of same at the time of taking, or paid compensation for her use, based upon such fair actual value, and for any damage she may sustain while thus in the possession of the United States. If there shall be disagreement between the United States and the owner or owners of such vessel as to such actual value or fair rate of compensation, then the same shall be determined by arbitration, the method of which shall be set forth in the contract.

(2) That all repairs and reconditioning of the vessel shall, when possible, be done in a port in the United States or its possessions: provided, however, that the right of the vessel to the payments provided by this act shall not be prejudiced should repairs essential to the continuance of its voyage be made in a foreign port.

(3) That the vessel shall carry any foreign mails from the United States which the Postmaster General shall require, for the whole or any part of a voyage: provided, such vessel shall not be under obligation to make a voyage which would not otherwise be made, unless such contract so expressly provides. All mail matter of the first, second and third classes shall be carried free.

(b) The board shall not be required to enter into any contract as provided in paragraph (a) hereof, for the payment of compensation, unless in the judgment of the board the person desiring to enter into such a contract with the board shall possess ability, experience, resources and character such as to justify a belief that the payment of the compensation prescribed herein will be reasonably calculated to carry out the purposes expressed in Section 1 of the Merchant Marine Act, 1920, and otherwise promote the general welfare of the United States.

Whenever the United States Shipping Board shall determine that the compensation prescribed herein is insufficient to induce the operation of vessels documented under the laws of the United States in any line or service which, in its judgment, is desirable and necessary to promote the welfare of the United States, the board may increase the amount of compensation provided by this act to such an extent as it may deem necessary to secure the establishment and maintenance of such lines or services, not, however, to exceed twice the amount of compensation provided herein. Whenever the board shall determine that the amount of compensation prescribed herein is excessive under the special circumstances of any particular case, it may reduce the amount prescribed herein with respect to such particular case.

Sec. 703. (a) There shall be created in the Treasury of the United States a separate fund or account which shall be known as the merchant marine fund and which shall be subject to withdrawal by the United States Shipping Board on requisitions duly approved by the chairman of the United States Shipping Board. The Secretary of the Treasury is hereby authorized and directed to transfer or credit to this fund all receipts into the United States Treasury derived from the following sources:

(1) All amounts paid to the United States Shipping Board by owners of vessels pursuant to the provisions of paragraph (c) of this section.

(2) All tonnage duties, taxes or fees imposed on vessels entering ports of continental United States, by an act entitled "An Act to provide revenue, equalize duties and encourage the industries of the United States, and for other purposes", approved August 5, 1909, or by any other or subsequent act of Congress, or by Section 303 of this act.

(3) Ten per cent of all duties imposed on imports into the United States by an act of Congress approved October 3, 1913, entitled "An Act to reduce tariff duties and to provide revenue for the government, and for other purposes"; or, imposed by an act of Congress approved May 27, 1921, entitled "An Act imposing temporary duties upon certain agricultural products to meet the present emergency, and to provide revenue; to regulate commerce with foreign countries; to prevent dumping of foreign merchandise on the markets of the United States; to regulate the value of foreign money; and for other purposes"; or, imposed by any similar and subsequent act of Congress on imports into the United States.

(4) The amount that would otherwise be payable by the Postoffice Department for the transportation by water of foreign mails by those vessels with reference to which contracts have been made for compensation under this act.

(b) The payment of compensation due under the provisions of this act shall be made at reasonable intervals, not exceeding six months. The United States Shipping Board shall prescribe the necessary rules and regulations with respect to the making of payments thereunder.

(c) Whenever the owner of any vessel or vessels in respect to which he has received compensation under the provisions of this act shall have derived a net operating income from the operations of such vessel or vessels in excess of 10 per cent per annum in any fiscal year during which he has received compensation hereunder upon his actual investment in such vessel or vessels and facilities employed in connection therewith, 50 per cent of such excess shall be paid to the United States Shipping Board to be placed in the merchant marine fund, but in no event shall such owner be required to pay the Shipping Board a greater amount then the total amount of compensation which he has received from the Shipping Board under the provisions of this Act, for the same period. Net earnings, as herein provided, shall be determined by the board in conjunction with the Treasury Department under rules and regulations to be prescribed by the board.

The direct aid has been computed for a differential based on a combination of speed, tonnage and distance covered, to cost approximately $15,000,000 the first year and $30,000,000 at the end of five years. I will not go into details of the rates of compensation proposed, with which you are all doubtless familiar, but it is expected that by the use of the formula worked out we will get a balanced merchant marine of the types of ships needed to cover the routes and the trades that meet our purposes. The funds are to be derived from 10 per cent of the customs receipts, and from doubling the present tonnage taxes. The ships receiving aid will not be paid for the carriage of mails, but the sum due for this will be paid by the postoffice into the merchant marine fund and should amount in the current year to approximately $5,000,000.

No one can measure what the amount of benefit to be derived from the indirect aids proposed will be. It is possible that with elimination of the army transports and with Section 21 some ships on the Pacific—maybe many ships—will make money. They then should not have cash aid from the Treasury. It is possible in the North Atlantic, with the immigration law proposed, that third-class ships will make money. They should not have aid. Therefore the proposed law contemplates that the direct aid shall follow the individual ship to the extent of 10 per cent of its earnings in any one year. If in any one year a ship earns over 10 per cent, the earnings above 10 per cent are to be divided equally between the government and the shipowner until the amount of the subsidy has been repaid, from which point on the owner of the ship keeps all the earnings Thus, the first burden of aid is put on the indirect aids.

If the indirect aids should prove in any case or cases sufficient from the profitable operation of the ship, the direct aid would come back to the Treasury. It is an automatic check on itself. And so the proposers of the law go further: If in certain routes the aid proposed should not be sufficient, the Shipping Board is authorized, out of its funds, to increase the amount of aid. For instance, we have a subsidized postal line today running to Australasia. This line has informed the Postoffice Department that, in spite of the subsidy it receives, it will not renew its contract because it cannot operate profitably.

Not knowing what the indirect aids in the Pacific would amount to, the Shipping Board has made its study of direct aids so conservatively that the direct aid proposed in the laws about to be enacted does not amount to as much as the subsidy this company to Australasia is now receiving, and which amount this company says is not sufficient for its profitable operation. In such a circumstance, the Shipping Board will have the power to increase the amount of aid if the indirect aids and the direct aids would not be enough. But if the Shipping Board makes an error in its judgment of the amount of aid it gives, or the added aid it gives, automatically a check is on the error, because after 10 per cent, half the profits go back to the Treasury.

### TITLE VIII—PROVISIONS AFFECTING RAIL AND WATER TRANSPORTATION

Sec. 801. It is hereby declared to be the policy of Congress to co-ordinate fully and completely rail and water transportation, and the United States Shipping Board and the Interstate Commerce Commission are hereby authorized, empowered and directed to take such steps as may be deemed proper and necessary to bring about such co-ordination. In pursuance of this policy, said government agencies are directed to create, from among their own personnel, a joint board to study rail and water traffic and conditions, their interrelations and the principles and policies essential to bring about their more complete co-ordination. Said board shall formulate and recommend such rules and regulations, not inconsistent with existing law, relating to traffic between railroads and shipping lines, that it may deem proper and necessary to bring about such co-ordination. It shall be the duty of the United States Shipping Board and the Interstate Commerce Commission to make effective, by joint or individual action as the case may require, such rules and regulations as they may respectively approve: Provided, that this shall not authorize the commission to make any rule or regulation affecting shipping, and that all the provisions of Section 19 of the Merchant Marine Act, 1920, shall continue in full force and effect with respect to the commission.

Sec. 802. The ninth paragraph of Section 5 of the Interstate Commerce Act is hereby amended by inserting at the end thereof the following:

> "Provided, that the provisions of this paragraph shall not apply in any case where such common carrier by water or such vessel is engaged exclusively in trade between any ports not included in the coastwise trade of the United States and not including trade upon the Great Lakes, but including trade between the United States and the Philippine Islands."

Sec. 803. That whenever any common carrier by water engaged in interstate or foreign commerce shall enter into any agreement with any common carrier by land engaged in interstate or foreign commerce, each such carrier shall file immediately with the Board a true copy, or if oral a true and complete memorandum, of every such agreement or modification, or cancellation thereof, to which it may be a party or conform in whole or in part, relating to the interchange of freight or passengers or the making of joint or through rates or providing warehousing, docking, or other terminal facilities, or providing that the one carrier shall act in any manner as agent or representative of the other carrier or in any manner providing for a co-operative working arrangement between the two carriers. The term "agreement" in this section includes understandings, conferences and other arrangements.

The board may by order disapprove, cancel or modify any agreement, or any modification or cancellation thereof, whether or not previously approved by it, that it finds to be unjustly discriminatory or unfair as between carriers, shippers, exporters, importers or ports, or between exporters from the United States and their foreign competitors, or to operate to the detriment of the commerce of the United States, or to be in violation of law, or to be otherwise detrimental to the interest and welfare of the United States, and shall approve all other agreements, modifications or cancellations. Agreements existing at the time of the enactment of this Act shall be lawful until disapproved by the board. It shall be unlawful to carry out any agreement or any portion thereof disapproved by the board. All agreements, modifications or cancellations made after the enactment of this Act shall be lawful only when and as long as approved by the board and before approval or after disapproval it shall be unlawful to carry out, in whole or in part, directly or indirectly, any such agreement, modification, or cancellation. Whoever violates any provision of this section shall be liable to a penalty of one thousand dollars for each day such violation continues, to be recovered by the United States in civil action.

### TITLE IX—MISCELLANEOUS PROVISIONS

Sec. 901. That any official, agent or employe of the United States, including legislative, judicial and diplomatic officials and officers of the army and navy, traveling by water when the expense of such passage is chargeable directly or indirectly to the United States, shall when practicable travel in a vessel documented under the laws of the United States. When passage in a vessel thus documented is not practicable and the voyage is made in a vessel under a foreign flag, it shall be the duty of such person to mail to the United States Shipping Board, Washington, D. C., within thirty days after arrival at the port of destination, a written notice that the voyage has been taken, stating the ports of embarkation and destination, the date, the name of the vessel, and the reason why the voyage was not made in a vessel documented under the laws of the United States.

Any person subject to the provisions of this section who fails to comply therewith in respect either to the passage taken or the mailing of the notice required, shall not be reimbursed for such passage money, or shall be surcharged in his accounts with the United States with the amount thereof, as the case may require.

Sec. 902. That all goods, wares, merchandise and material of every nature, including army and navy supplies, belonging to or intended for the United States, transported by water, shall when practicable be shipped in a vessel documented under the laws of the United States. When shipment in a vessel thus documented is not practicable and the shipment is made in a vessel under a foreign flag, it shall be the duty of the officer or agent of the United States authorizing or making the shipment, within one month thereafter, to mail a written notice to the United States Shipping Board, Washington, D. C., stating the ports of departure and destination, the date, the name of the vessel, and the reason why the shipment was not made in a vessel documented under the laws of the United States.

Sec. 903. The board is authorized and directed in aid of the accomplishment of the purposes of this act to make all necessary rules and regulations to carry out the provisions and make effective the intent of this act.

Sec. 904. That if any provision of this act is declared unconstitutional or the application of any provision to certain circumstances be held invalid, the remainder of the act and the application of such provisions to circumstances other than those as to which it is held invalid shall not be affected thereby.

Sec. 905. That this act shall take effect and be enforced sixty days after its enactment and shall continue in force until otherwise provided by law.

# RESOLUTIONS FROM THE MIDDLE WEST

THE Middle West Merchant Marine Committee has read with great interest the message of President Warren G. Harding on the subject of adequate aid for the establishment of an American merchant marine. Immediate action is in our opinion imperative. Those who oppose any American merchant marine are seeking delay and in playing for time are endeavoring to bring about a division in the ranks of those who are earnestly working for the establishment of a 100 per cent American merchant marine.

The chaotic situation brought about by the nonenforcement of the definite policy set forth in the Merchant Marine Act of 1920 has been almost fatal to our merchant marine. The proportion of our foreign commerce carried in American bottoms has fallen from 50 per cent in 1920 to less than 30 per cent at the close of 1921.

The situation can only be saved by wise and prompt action by this Congress, to be made effective at the earliest possible date and put into operation by the administration at once.

We reaffirm our faith in the efficacy of the Merchant Marine Act of 1920 and can look with favor only upon such legislation as will supplement and strengthen rather than nullify or repeal the provisions of said act.

The Shipping Board should not be permitted to liquidate its assets or discontinue its operations until such time as all the provisions of said Merchant Marine Act shall have been carried out in the spirit and letter of the law. We refer particularly to that part of the Merchant Marine Act which provides additional outlets from the Middle West through the Gulf, South Atlantic and Pacific Ports, as well as the North Atlantic, by the establishment and maintenance of trade routes from these ports to the markets of the world.

We recognize that in order for the American merchant marine to compete with the established lines of other nations there must of necessity be large American steamship companies, but it is just as essential to promote the establishment and encouragement of less pretentious companies of operators from the smaller ports who will ultimately purchase government tonnage. The greatest danger entering into the merchant marine question from our viewpoint is the possibility of one or more ports dominating the shipping situation by reason of financial pre-eminence, thus leaving the maintenance of the new trade routes from the lesser ports subject to the whims of a small group of men financially interested in forcing the products of the Middle West through a very limited number of ports.

The Middle West is a vast inland empire within which is produced the largest percentage of products that go to make up our exports. It has many natural outlets to the markets of the world. Its people are determined never again to be placed in a position where they can be denied the use of these outlets by any arbitrary action on the part of any selfish interests.

We must have a really national merchant marine; not one controlled by special interests or dominated by sectional influences.

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### RESOLUTION

THAT whereas the Shipping Board in carrying out the Jones Bill has encouraged and developed the lines berth service by promoting and maintaining trade routes; and whereas history records that those maritime nations that have been most successful are those which have encouraged and developed tramp tonnage; and whereas tramp tonnage is of necessity requisite as a medium of cheap freight rates for transporting bulk and seasonable cargoes; and whereas our country has failed to develop and encourage the development of this most important adjunct to an American merchant marine:

Therefore, be it resolved that the Middle West Merchant Marine Committee respectfully urges the Shipping Board to encourage the development of tramp operation and of necessity shipping companies to successfully carry on the operation of the tramp association.

# WATER TRANSPORTATION

## An Analysis of American Transportation Problems. The Sea-Going and Coastwise Fleets of the United States. Protection Needed by American Marine Operators to Meet Foreign Competition

By WINTHROP L. MARVIN*

FEW are the observers who would have ventured to predict in the year 1914 that one result of the great world war just opening would be to add ten million tons of ocean shipping to the merchant marine of the United States, thereby making our country a close rival, so far as total tonnage is concerned, of the United Kingdom, which since 1860 had been the unchallenged mistress of the seas. An expenditure of more than three and one-half billion dollars, the proceeds largely of several issues of Liberty bonds, has given the United States a merchant navy measured by our methods of 18,282,000 tons gross register in 1921 as compared with a total tonnage of Great Britain measured by British methods of 19,320,000.

But of the new American merchant marine this distinction must be made, that a great part of it is employed in near-by home commerce, as, for example, the 2,839,000 tons of the great Northern Lakes and the mighty coastwise fleets of the Atlantic, the Pacific and the Gulf of Mexico. However, American shipping registered for foreign commerce on June 30, 1921, had attained a magnitude of 11,081,000 tons, an increase of 10,005,000 tons since June 30, 1914, or a shipping twice the entire great merchant fleet of the German empire of the year when the Kaiser rashly challenged the world to arms. Of the actual sea-going vessels of the United States employed in both foreign and coastwise commerce, 7,993,000 tons at the beginning of this fiscal year were owned by the United States Shipping Board, and 5,240,000 tons by private shipowners—firms or corporations.

### Great Fleet

These are records of magnitude. The great merchant marine of our fathers—the unmatched fleet of clipper ships and steam ocean liners—amounted to 5,353,000 tons in 1860. At last, after many years, American shipping has assumed a place in the sun comparable with our great national industries.

Of our present merchant fleet only 1,294,000 tons all told are sail craft, out of a total of 18,282,000 tons. All the rest, except for 1,180,000 tons of tow barges, is power driven. Allowing for the superior efficiency of the steam or gas-propelled ship—three times the efficiency of the sail ship—our merchant marine, measured by its capacity for transportation, has increased ten-fold in sixty years. That is to say, the sea, lake and river carriers of the United States have ten times the delivery capacity of the ships of 1860-1861. This is a fact which justifies the merchant marine in holding its head reasonably high among the present-day great instrumentalities of transportation.

### Coastwise Shipping

It speaks well for the essential vitality of the merchant shipping industry that on the coasts of the United States it has managed to increase its tonnage three-fold and its actual capacity eight-fold in six decades against the powerful competition of the most effective railroad systems in the world. For American coastwise ships and railroads are competitors in a considerable degree, though also co-operators with each other. An excellent example of the way in which American railroads and American ships have been made to work together is the Southern Pacific Company, with its splendid fleet of twenty-five steamers, of a total tonnage of 129,938, plying between New York and the Gulf of Mexico, as an essential link in one of the greatest of our transcontinental systems. It used to be an American policy and a wise one to yoke ships and railroad lines in a common service, and though this policy was largely forbidden by the Panama Canal Act of 1912, it is not easy to convince thoughtful men that the United States thereby has been the gainer.

Our ships need our railroads and our railroads need our ships. If there cannot be common ownership, there must at least be close harmony and co-operation. It is a fact of much significance to the railroad systems of our country that under our flag there now exists an immense fleet of ocean carriers, American-owned and pledged to serve first American interests. There is no reason why with proper team play these American fleets may not be made dependable extensions of American railroads. Under a proper policy of national encouragement and not discouragement there is no reason why American shipping companies, with alert traffic organizations abroad, may not bring to our railroads a more efficient service than the foreign steamship companies have ever given, plus the vital factor of American good will. If the plans of the present national administration take root, no American railroad management will have any shadow of an excuse to link itself by preferential traffic or terminal agreements with a foreign merchant shipping, which is to say, the naval reserve, of any foreign government whatsoever.

### Railroads and Shipping

We of the American ocean shipping industry bespeak from the railroads a closer understanding than has ever existed before. About one-third of our present ocean-borne tonnage is coastwise; about two-thirds normally and constantly must be working overseas. These coastwise carriers, having a natural advantage in not being compelled to maintain rights of way of stone, earth and steel, have an important economic part to play in assembling cargoes at our ports for our overseas carriers, and in assembling and distributing goods which the rail in turn must serve. One of the most powerful arguments for the strengthening particularly of our overseas merchant marine is that a more effective co-operation can be maintained by American railroads with such a merchant marine than would be possible with foreign corporations owned, controlled and directed abroad and maintained for the purpose of serving primarily alien, competitive interests.

American shipping, overseas and coastwise, is suffering severely today from the nightmare of depression that has seized the commerce and finance of the world. Of 1300 steel steamers of the Shipping Board fewer than 400 are now in operation. From one-fourth to one-third of the tonnage of private ownership is unemployed. This is not strange, with the exports of the United States shrunken to one-half the volume of the exports of 1920. But American overseas shipping differs sharply in this point from American railroads, that while, except for the Canadian lines, our railroads are immune from direct international competition, American ships, with their higher wage scales and living conditions, are engaged in what is unquestionably the most intensely international competition in the world.

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* Address of Winthrop L. Marvin, vice-president and general manager, American Steamship Owners' Association, before annual meeting of American Society of Civil Engineers.

Time is too short to go into details of the international problem of the American merchant marine. But it should be emphasized that after all this is not a complex problem, as is too often assumed. As a matter of fact, the whole proposition can be summed up in a very few words: The American merchant marine in overseas trade used to be a vigorously protected national industry. So long as it was protected even in part by the preferential customs duties and tonnage taxes of the fathers of the republic—of Washington, Hamilton, Jefferson and Madison—and afterward, by the mail subsidies of the '40's and '50's, it flourished as incomparably the most efficient and prosperous shipping in existence. For sixty years this American merchant marine, except the coastwise fleet, has been the one absolutely unprotected national industry—and for this reason and no other, it had up to 1914 constantly declined.

### Protection Needed

Throughout the old years when American overseas shipping was protected, American ships conveyed on the average 80 per cent of the imports and exports of this country. On August 1, 1914, American ships were conveying only about 10 per cent. All who are engaged in transportation will remember what happened in that war summer of 1914, when the German liners were withdrawn and "interned", and British, French and Italian ships were summarily commandeered for the service of their governments. Thanks to sixty years of neglect, there were then almost no American ships, and while the elevators and warehouses inland were full to overflowing, the railroad tracks for miles back from all the ports were choked with laden freight trains which could not be moved because there were no ocean ships available. Commerce and agriculture for the time being were stricken with paralysis, at a cost of uncounted millions to American producers—and all for the lack of a real American merchant marine.

That experience shocked the country into a knowledge of the vital interdependence of agriculture, manufacturing and shipping of our own. That was a lesson not easily forgotten. The President of the United States has presented to Congress a plan for national consideration of the merchant marine to take the government out of the shipping business and to make it possible for American shipowners and seamen to live and prosper on the routes of ocean trade, and this plan should most certainly command the eager attention of all Americans interested in trade or transportation by land or by sea.

It is not a problem now of creating a merchant marine. We already have a vast fleet in being. We have also a great corps of experienced and efficient officers and men, all the officers and a majority of the crews American citizens. The problem which the President has placed before the nation is a problem of so aiding and protecting this fleet in being and its personnel that the good tonnage of the government may be transferred to private hands and operated by private initiative and enterprise under a national policy that will give American shipping the fair chance which the tariff has brought to manufacturing and to agriculture alike. It is the united conviction of the practical men of the American ocean shipping industry that without the equivalent of that protection which our other national interests have long enjoyed, the government-owned war-built tonnage will remain indefinitely in government hands, subject to the inevitable disabilities of government control and operation, and that private shipping, now nearly one-half of our ocean-going merchant marine, and destined with fair play to be the greater half of it, will again languish and decline because it is forced unaided to fight the competition of a kind by which no other American industry is or has been confronted.

"Greater Prosperity Through Greater Foreign Trade"

*Ninth*
*National Foreign*
*Trade Convention*

PHILADELPHIA, PA.
May 10, 11, 12
1922

American shipowners, operators and shipbuilders of ocean tonnage have unitedly gone on record to the government of the United States as declaring that without a vigorous national policy, direct and indirect national aid, the ships of foreign governments, backed under every flag by some form or degree of government assistance and manned under wage and living conditions which Americans will not accept, will again inevitably drive our ships from the ocean and destroy at once the delivery service of our ocean commerce and our resources of a national naval reserve. Profound is the significance to the American people of the statement with which Secretary Hughes opened the disarmament conference: "The importance of the merchant marine is in inverse ratio to the size of naval armaments!"

In the interest of peace we are going to scrap a great part of the best of our navy. But every obligation of national security and prosperity forbids that we should follow up the unexampled national sacrifice already made at Washington by the scrapping of our merchant fleet.

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## WATERTUBE BOILERS REPLACE SCOTCH ON TRANSPORT MADAWASKA

THE new boiler installation of the United States Army transport Madawaska, now being reconditioned at the yards of the Morse Drydock & Repair Company, Brooklyn, New York, will consist of six Babcock & Wilcox watertube, 2-inch type, built for a working pressure of 250 pounds and having a total heating surface of 24,084 square feet. They will burn coal under forced draft. These boilers are so designed that they will occupy the boiler room space now taken up by the three double-ended Scotch boilers in the vessel, the space taken up by the single-ended boiler being added to the forward bunkers.

Several watertube boiler installations on vessels formerly equipped with Scotch boilers have been made by the Babcock & Wilcox Company during the past year.

# TWO FINE PASSENGER LINERS

## United American Lines Purchase Dutch Ships

AMERICANS who are interested in shipping and ocean travel are much gratified over the recent purchase by the American Ship & Commerce Corporation, one of the Harriman concerns, of two fine 20,000-ton passenger ships, the steamers Rosolute and Reliance. These boats are among the largest and finest owned by private American interests and their acquisition is an incident of singular importance in the history of the American merchant marine.

These ships, which were completed in 1920, were formerly owned and operated by the Royal Holland Lloyd Line in their South American service. The new owners will run them between New York and Hamburg, with calls at Plymouth and Boulogne for the convenience of passengers destined for London and Paris. The Resolute makes her first trip out of New York on May 2, the Reliance following on May 16. Thereafter a regular fortnightly schedule will be maintained. The boats will be operated and managed by the United American Lines, which is the operating organization for the American Ship & Commerce Corporation.

If names mean anything, the new ships will be exceedingly popular with American voyagers. The yachts Resolute and Reliance are famous as successful defenders of the America's cup in the international races. W. A. Harriman, youthful shipping magnate and chairman of the American Ship & Commerce Corporation, chose these names for the new passenger ships, from among many others, because of their peculiar significance in American maritime history.

The Resolute and Reliance are steamers of the most modern and improved type. They are triple screw oil burners, with a speed of 17.5 knots. Though built in different yards, they are practically sister ships, each being about 620 feet in length over-all, 72 feet in breadth, and designed and fitted out along generally similar lines. No expense has been spared to bring them to the highest standards of comfort, convenience and safety. Those who have seen the boats, during their brief period of service, say they are both graceful and majestic in appearance.

The United American Lines' passenger steamer Resolute

Among its special features, each ship has a swimming pool, fully equipped gymnasium, botanical garden and a photographers' dark room. There is a ladies' hairdressing parlor, as well as a men's barber shop. A special room is set aside for children, equipped with diminutive furniture, supplied with games, and decorated with paintings from the land of fairies. Passenger elevators serve each of the six passenger decks, and there are separate lifts for baggage.

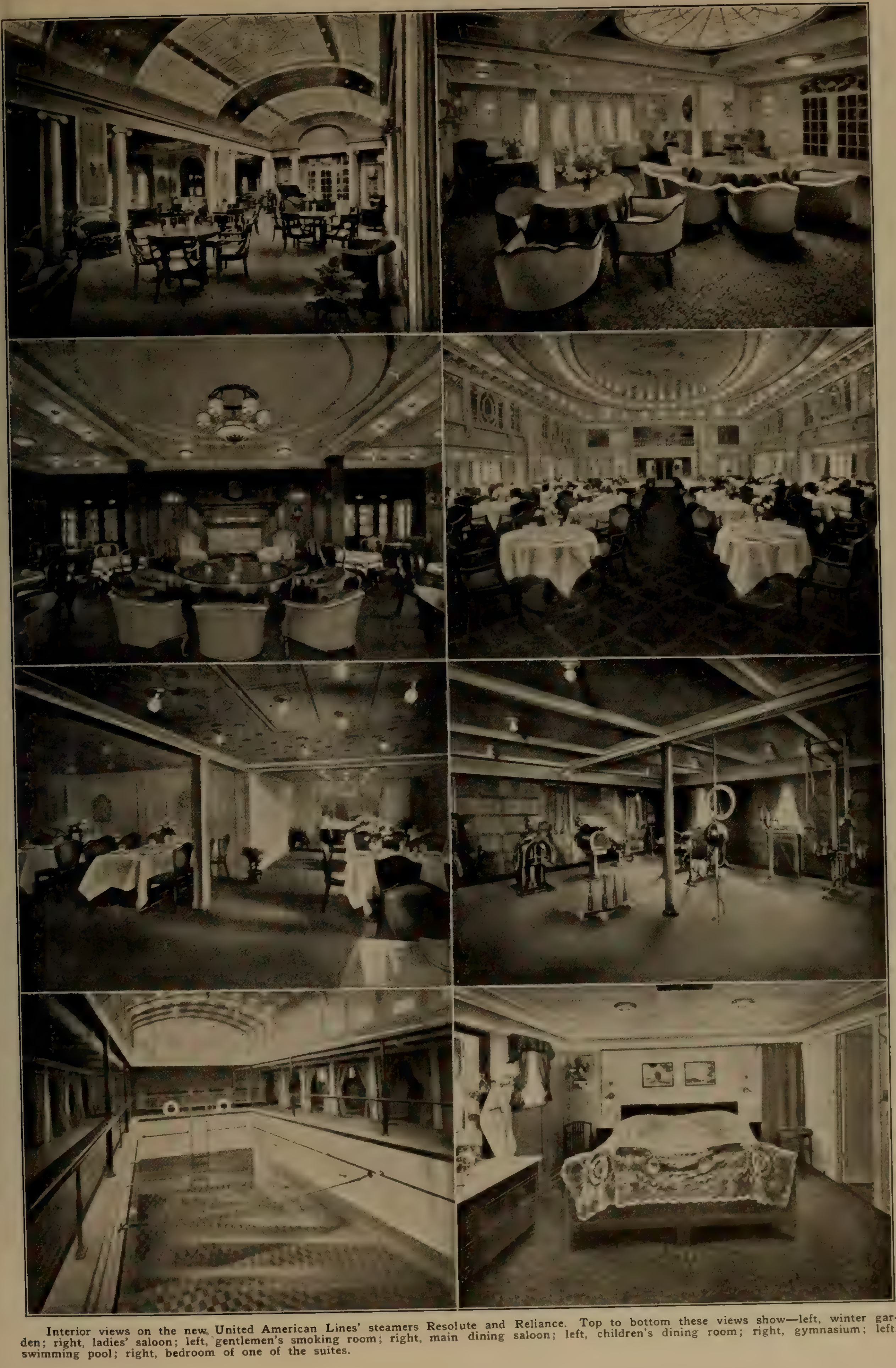
The public rooms include a large dining saloon where all first-class passengers may be served at one sitting, a social hall at the top of the grand staircase, a so-called winter garden for dancing and other social events, a veranda cafe where refreshments are served all day long, a smoking room, and a combination library and writing room. One feature of the construction is that all heating pipes, ventilation shafts and other unsightly fixtures are concealed and do not appear in public rooms or passage ways.

The furnishing of the staterooms is in accord with the generally modern equipment of the ships. Metal beds are found throughout the first-class, instead of berths. Porcelain basins with running water take the place of the old style washstand. Each stateroom has a wardrobe and dressing table. More elaborate suites provide writing desks, tables, sofas, private baths, etc. The ventilation is always under control of the passenger. Fresh air is supplied through the perforated ceiling paneling and all staterooms have electric fans.

Each steamer is propelled by three screws, driven by two reciprocating engines and a turbine. The turbine drive is indirect, obviating the necessity of a separate turbine for reversing. The steam steering gear is operated by two independent engines and is capable of swinging the 40-ton rudder through its full arc in 30 seconds with the steamer fully loaded and going at full speed. Electricity is supplied to the 5000 bulbs aboard each ship by four turbo-dynamos. The equipment includes two ice-making machines.

While travel at sea no longer carries with it any suggestion of danger, modern steamships aim to provide every possible device to ensure safety. The Resolute and Reliance are fitted with double bottoms, watertight bulkheads with self-closing doors, smoke bulkheads, steam and water fire extinguishing apparatus, wireless telegraphy, submarine signal system, fire alarms, loud-speaking telephones to all parts of the ship, etc. Bilge keels and two large large motorboats, easily sufficient to take care of all passengers and crew.

The purchase of two large passenger ships, in the midst of the current depression, indicates that at least certain American shipping companies are looking beyond the present and into the future. The American merchant marine has needed more high-class passenger tonnage, and the registration of the Resolute and Reliance under the American flag is a big step toward supplying that need.



Interior views on the new United American Lines' steamers Resolute and Reliance. Top to bottom these views show—left, winter garden; right, ladies' saloon; left, gentlemen's smoking room; right, main dining saloon; left, children's dining room; right, gymnasium; left, swimming pool; right, bedroom of one of the suites.

# EUROPEAN MARINE NOTES

## Impressions of a Californian Abroad

A GREAT deal of discussion has been engendered in shipping circles in the United Kingdom by the report of the Liverpool Steamship Owners' Association for the calendar year of 1921. This association owned at the close of the year 5,778,824 gross tons of steam shipping, comprising over 26 per cent of the total British steam tonnage afloat and, an even more significant comparison, 34 per cent of the total number of British steam vessels above 5000 tons.

The report shows that the demand made during 1921 by the oversea trade of the United Kingdom on the available ship carrying power was in the case of imports 30 per cent and in the case of exports 63 per cent less than that of 1913. The figures for weights show that in 1913 the United Kingdom imported 56,002,000 tons of foodstuffs, tobacco, etc., raw materials and manufactures, exclusive of coal, while in 1921 of the same lines only 35,900,000 tons were imported.

### Dislocation of Trade

Complete details are not yet available for 1921 that would allow of a detailed analysis of the dislocation of trade with respect to the various sources from which imports are being brought in, but so far as the principal sources of foodstuffs are concerned, it is shown that with the exception of the United States they all show a decrease in comparing 1921 with 1913. The United States shows a 70 per cent increase, whereas the food imports from European countries into Britain show an 80 per cent decrease.

These figures should be very interesting to American exporters as showing that we will have to look forward to a very decided dislocation of our own markets for foodstuffs when the great producing areas in Europe shall have returned to normal. This condition is causing great discussion among shipping men and exporters in Britain because it is recognized that these great producing areas, like agricultural Russia, were under normal conditions ready and willing to accept an equivalent value in British coal, British manufactures and British services in shipping and finance in exchange for the 6,000,000 or so tons of food that they were sending to Britain, and British exporters and shipping companies will, therefore, very rightly bend every energy toward regaining this European trade.

The Liverpool Steamship Owners' Association calls attention to these matters in no uncertain voice and points out the danger to Britain of continuing to buy such enormous quantities of foodstuffs from sources which "do not need our coal and many of which endeavor by tariffs to exclude our manufactures and some of which want neither our shipping nor our financial services. It follows that prosperity in our country can never be re-established until the markets, in which under pre-war conditions we were able not only to buy 6,000,000 tons of food but also to sell in exchange our coal and manufactures, have been reopened. In the hope of concentrating effort on this point, the detailed figures showing the nature and extent of the dislocation which has taken place in the sources of our food supplies are set out in this report."

This report also calls attention in no uncertain terms to the dilatory methods of the government in the matter of reparations under the peace treaty. "The government still hesitates to recognize the fact emphasized by the shipping industry in 1917: 'Retribution for even crimes committed against humanity must be direct and immediate; it cannot control the commercial policy of the empire, for all international trade must be based on benefits to be derived by all the nations concerned, and its maintenance is inconsistent with the policy of imposing loss.' Other nations have to realize that if they would sell they must also buy . . . the sea is free, but the governments are blocking the flow of traffic through the ports by reparation demands, prohibitions and tariffs, and they are thereby hampering commerce as effectively as did the submarine in the late war."

At the close of the report there is a plea for individual effort and for the removal of government interference in business, which applies not only to British conditions but to the conditions under which practically every shipowner in the world is working today, and possibly with greater force to the conditions in America than in any other nation. This portion of the report is reproduced here in full:

### Individual Effort

"The shipowners have, day by day, passing through their hands the commodities, the distribution of which is the aim and object of commerce. They know that those commodities are produced by the innumerable growers of the harvests and the workers in the mines and factories all over the world. They know that the purchasing power of many communities is dependent on the harvests they produce, and they experience, season by season, wide fluctuations in the yield of those harvests, and therefore in the purchasing power of the different markets of the world. It is the function of commerce to bring together, day by day, those countless producers and consumers scattered all over the world. They do not work, and want, as drilled and disciplined armies. Each has his own individual needs, and his ability to satisfy them is dependent on his own individual efforts. It requires the knowledge, enterprise, energy and capital of the individual traders to find out and to satisfy those ever-varying demands for the commodities produced throughout the world. And in that work the trader can be easily hampered, but rarely, if ever, helped by the State.

"At no time in the history of the nation has the need of the services of the individual traders been greater. The war has not only shattered international credit, it has crippled the producing and, therefore, the purchasing power of whole nations. Credit, producing and purchasing power must all be re-established throughout the world if this country is to prosper. All governments can do much by adopting and steadfastly adhering to policies which will promote peace and restore confidence throughout the world. Some governments can do much by sweeping away barriers to commercial intercourse between nations. But it is mainly on the knowledge, enterprise, energy and capital of the individual traders that the nations must rely to build up again international credit, to re-open once again the channels of trade that are now closed, and to discover and develop new markets, and the efforts of the traders will be in vain if they be not given the commodities with which alone they can successfully trade. They must be supplied with commodities which represent the fullest possible value for the prices asked, and those prices must be within the ability of the buyers to pay."

### Classical Steamers

There has recently been completed for the order of the Aberdeen Line for passenger and cargo service from London and Plymouth to Capetown and Australian ports a splendid twin screw cargo and passenger steamer. This vessel, together with a sister ship, is being built by Harlan & Wolff.

The dimensions are 500 feet in length, 63 feet beam, 35 feet 3 inches depth. The propelling machinery is of the latest type Browne-Curtis compound turbines with double reduction gearing developing 5500 H. P. The auxiliary machinery is all electrically driven, power being supplied by two 150 K. W. turbo-generators. There is also installed an emergency 75 K. W. Diesel driven set at a point well above the water line, which can be used for steering, lighting, working windlass and winches in case of any accident to the ship or machinery disabling the main plant.

Quite a number of these intermediate passenger liners are being built in the United Kingdom, but our readers will all recognize the fact that these two are of a unique distinction. Two sisters—one, her name is Diogenes; the other, she is hight Sophocles.

### New Dutch Yard

At least one shipbuilding plant on the continent is looking forward to the future with great confidence. Wilton's Engineering & Slipway Company of Rotterdam, one of the oldest established firms of its kind in Holland, has just finished the construction at Schiedam of a very fine modern shipbuilding and ship repair plant covering an area of about 170 acres.

A covered shed for shipbuilding purposes in connection with this yard measures 540 feet in length by 425 feet in width. Vessels are launched from this shed into a fitting-out basin. The basin has an area of 35 acres and in it is moored a floating dock built by Blohm & Voss at Hamburg which is capable of lifting 46,000 tons. It is 694 feet long with an outside width of 168 feet and a width inside the wings of 132 feet at the bottom and 139 feet at the top. This dock is built in six parts; the length of each section is 114 feet. The dock is all of steel construction, each pontoon being divided into three compartments by two longitudinal bulkheads, the center space being used as an air tank.

### A Great Floating Dock

The keel blocks are movable and adjustable to various heights by means of special keys, and a new type of bilge block adjustable by mechanical means from the side walls has been installed. This bilge block consists of a hinged girder with its outer end supported on a roller which is adjustable by means of a screw, the bottom of the girder being so shaped that when the roller is screwed in toward the center of the dock the girder swings up on its hinge, bringing the block into position at the bilge of the ship.

This dock will take vessels with a draft of 33 feet at normal low water. It is entirely self-contained, having its own power station with Diesel engine driven generator supplying power for electrically operated pumps for working the valves and the adjustable bilge blocks, and electric lifts to raise workmen from the pontoon floor level to the upper decks of the structure.

With this new dock and the completion of the shops at their new plant, Wilton's will be in a position to undertake promptly and economically the maintenance and repair of the largest ocean liners.

### Rhine-Main-Danube Canal

Much speculation is rife in European shipping circles as to the probable effects which will be brought about by the completion of the Rhine-Main-Danube canal. The great Central European waterway will undoubtedly divert a large amount of the traffic which is now carried by rail to the North Sea and French ports for transport by sea to Black Sea ports. On the other hand, the cheaper transportation afforded by the canal on bulk commodities, such as coal, will undoubtedly mean a re-alignment of the markets for the coal supplies of Europe and will open up many of the more distant ore fields. It is estimated that 4,000,000 to 5,000,000 tons of traffic will be distributed in both directions over this waterway at very great savings in cost of transport. The canal will probably be one of the largest factors in the hastening of the reconstruction in Central Europe.

### A New Motorship

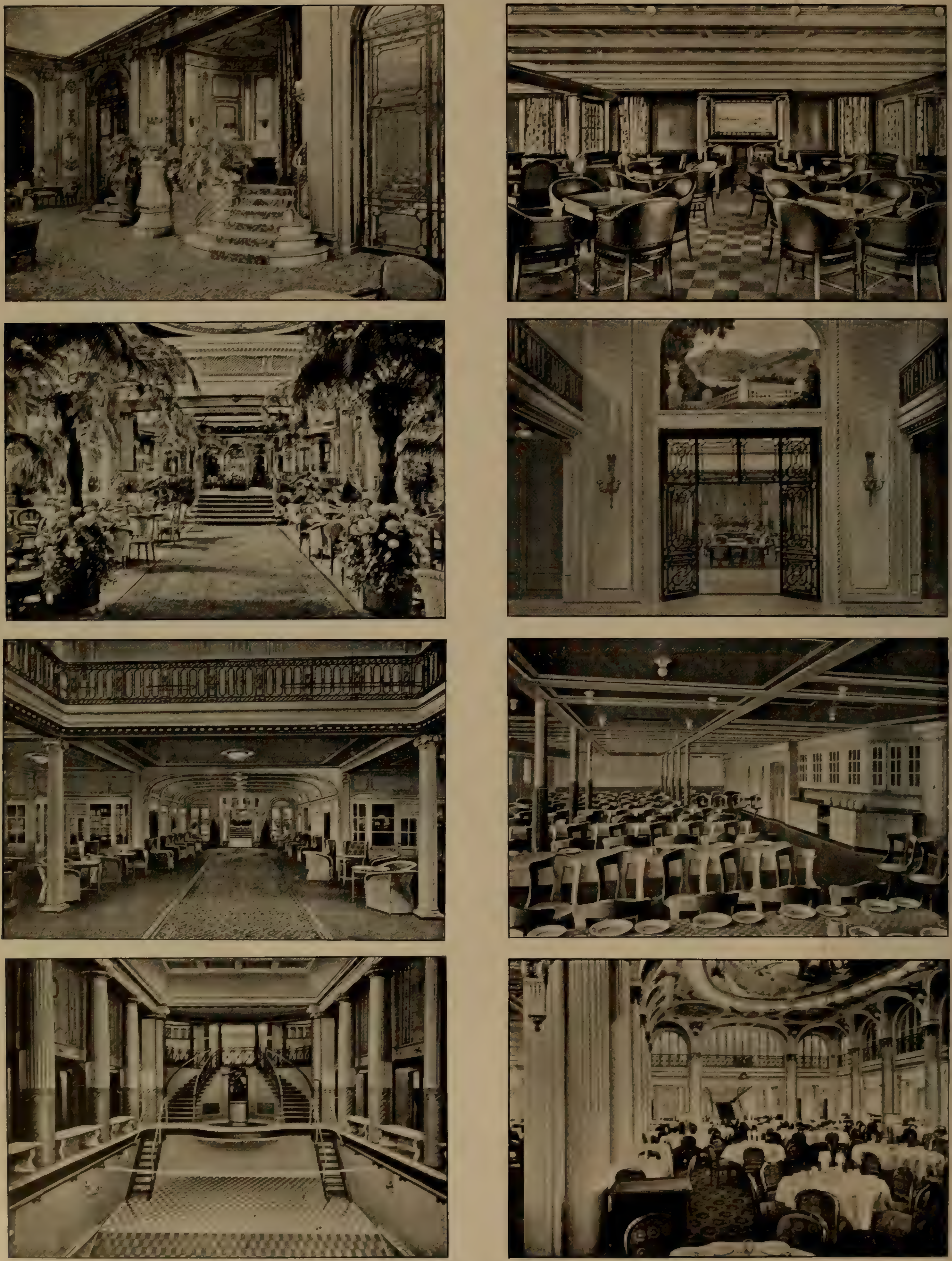
A very significant contract has just been let by Alfred Holt & Company to the Scott Shipbuilding & Engineering Company for a cargo vessel 400 feet in length and 52 feet beam, equipped with twin screw machinery of 2500 B. H. P., this machinery to be of the Scott pattern of steam Diesel on the Still cycle. Readers of Pacific Marine Review will remember that this new internal combustion motor has been described a number of times in these columns, notably in October, 1919.

The Scott Shipbuilding & Engineering Company of Greenock have been building ships at their present location for over two hundred years. They were among the pioneer steam-shipbuilding companies of the United Kingdom and have to their credit most of the notable Clyde and Glasgow-Liverpool steamers of the first quarter of the nineteenth century. They were the first firm in the United Kingdom to recognize the value of high pressure steam and tubular boilers and were among the first to install compound engines. They will now be the first firm in the world to install in a sea-going vessel engines working on the Still cycle.

This cycle follows the plan of using for useful work in the engine the heat energy lost through the walls of the cylinder in the ordinary Diesel. Practically the engine is a Diesel engine on the upper side of the piston and a steam engine below using the steam in an annular cylinder on the lower edge of the piston trunk. The Scotts have had a 350 B. H. P. experimental engine of this character working for some time on heavy overloads in their shop and are regularly obtaining a fuel consumption of 0.375 pounds per B. H. P. hour.

The advent of this new ship will be loooked forward to with a great deal of interested anticipation on account of the fact that it is hoped by this new system to reduce materially the weight and space occupied by the Diesel machinery.

Steamer Homeric



Some of the beautiful interior effects in the White Star liner Majestic, the largest ship afloat. Left to right, top to bottom—A corner in the first class lounge; second class smoking room; entrance to first class palm court and Ritz-Carlton restaurant; entrance to first class lounge; main entrance lobby to first class public rooms; third class dining room; first class swimming bath; first class dining saloon.

# THE MAJESTIC

## World's Largest Vessel. New Architectural Features Embodied in Design. White Star Experts Provide Ample Insurance for Safety of Passengers

We are glad to be able to give our readers a few views of the interiors of the White Star Line steamer Majestic, the world's largest passenger liner.

The Majestic, built by Blohm & Voss of Hamburg for the Hamburg-American Line, was unfinished at the opening of the war. She was taken over by the Reparations Commission and purchased from them by the White Star Line of the International Mercantile Marine and finished by Blohm & Voss under the direction of the experts of her new owners. She was intended by her builders and architects to be, and is today, the last word in marine architecture.

Her length over-all is 956 feet, her beam 100 feet, and her height from the keel to the boat deck 102 feet. She has a gross tonnage measurement of 56,000 and a displacement of 64,000 tons when loaded to her Plimsoll mark.

Her turbine machinery will develop a normal S. H. P. of 62,000, and she has sufficient reserve capacity to work this up to a maximum of 91,000. Her average sea speed will be 23 knots per hour, with a possible maximum of 26 knots. Incidentally, for the benefit of our readers in connection with present pending legislation at Washington, if this ship were operating under the American flag she would be eligible, if operated at full speed the year round, to apply for a subsidy which under the terms of the act now before Congress would amount to approximately $2,000,000 a year.

### New Uptake Arrangement

Architecturally, perhaps her most interesting feature and one that is new in the world of ships is the manner in which the uptakes from her huge boiler plant to the three stacks are made to work into the scheme for great wide-open spaces in the public rooms. The uptakes are so designed that they hug the skin of the ship as closely as possible and are brought together in a strong arch supporting the stack and opening into it above the ceiling of the great public halls. It has been found that this arrangement works for better draft on the furnaces and at the same time makes possible a very beautiful arrangement, giving through the center of the superstructure an uninterrupted, wide-open vista more than 250 feet long. This method of building the uptakes also provides very much better ventilation for the fire rooms and allows the architects free scope in making arrangements of staterooms in such a way as to use to the best advantage the entire space amidships.

In building the Majestic every precaution was taken to insure protection from sinking or foundering through damage due to collision by the use both of watertight bulkheads, double skin for a great portion of the entire length, and side bunkers for fuel oil. Great care has been taken also to safeguard against the danger from fire. All of the steel bulkheads are coated with fireproof material and the necessary openings are provided with special fireproof doors. All of the main staircases are arranged in such fashion that they can be isolated in case of fire and kept open to insure means of escape to the upper decks. All of the watertight doors in bulkheads are under automatic hydraulic control from the navigating bridge with telltale electric signals, and 450 fire alarms are distributed throughout the vessel which indicate automatically to the officer on watch the exceeding of any set temperature in any compartment.

### Safety Apparatus

A smoke detection system is also installed, all of these systems being centralized on the navigating bridge where competent officers are constantly on watch. Lifeboats and buoyancy apparatus sufficient to take care of all passengers and crew are provided under perfect control as to launching through a special arrangement of the Welin system of davits. Three wireless stations are provided, the largest capable of maintaining permanent connection with both continents during the whole of the trans-Atlantic voyage. Anti-rolling tanks and bilge keels insure sufficient steadiness to minimize discomfort from this source.

About 4000 passengers in three classes will be carried, the accommodations being arranged upon eight steel decks, four of which cover the entire length of the ship and four run about half the length of the ship in the central superstructure. The first-class passengers will be accommodated on seven of these decks amidships, giving them convenient access to the splendid suite of public rooms.

### Public Rooms

It is said that the first-class lounge, the palm court, and the Ritz-Carlton restaurant on this ship are the largest steel rooms ever erected on any vessel. The lounge opening aft of the grand vestibule has an area of 4000 square feet and a height of 26 feet with a glass dome having an area of 3800 square feet. The palm court and restaurant form one steel house 23 feet high with an area of more than 5600 square feet, the floor of the restaurant, however, being raised three feet above that of the palm court.

The first-class dining saloon is the loftiest ever built into a ship; the central portion with an area of 2300 square feet, has a height of 31 feet above the saloon deck. The arches from which the ceiling is sprung are supported by Ionic columns with wide spacings, the saloon stretching out into the wings on either side, giving a total floor area for this room of 11,350 square feet.

The pictures give a much better idea of the spaciousness and beauty of these rooms than can be conveyed by words.

A thoroughly equipped gymnasium is provided, a library stocked with over 4000 volumes, a card and game room with all of the most popular indoor sports.

Under the commissary department there are no less than eight separate galleys, including one especially equipped for taking care of Jewish passengers. For both the first and second-class passengers electric elevators are provided connecting the eight decks.

In short, this vessel ready for sea and fully loaded is a first-class young city equipped with every modern convenience for all classes of population.

# HISTORY OF MARINE ENGINEERING

By R. J. ALEXANDER

Chancellor Livingstone
William Symington
John Stevens
Robert Fulton

The old Soho works of Messrs. Boulton & Watt at Birmingham, England, as sketched by Professor John E. Sweet in 1862. Nearly all of the marine engines of the world from 1800 to 1815 were built at this plant.

Monopoly, 1798
Charlotte Dundas, 1802
1st Phoenix, 1804
Clermont, 1807

IN our introductory installment of this series we had come down to the opening of the nineteenth century, and we stated in the concluding paragraph that we had arrived at that point with about four pounds of steam in the boilers and possibly a 15-inch vacuum in the condenser, which we believed would give us sufficient power in starting out on a second installment so that we could drive through the first half of the nineteenth century. We were, however, reckoning without technical editors, who in a case of this kind are even worse than head winds. It seems that the editor of Pacific Marine Review had arranged that the April issue should be a motorship special and that, therefore, he could only allow the history of steam navigation a very limited space. We will, therefore, have to content ourselves in this installment with the first twenty-five years of the nineteenth century.

It is hard enough for an honest steamer in these days of low freights and stern competition to have to lay up on the mudbanks and watch the motorships gather in all the money without having the progress of their history also interfered with by the vagaries of technical editors who have fallen in love with these modern pirates of the sea.

In the year 1798 Chancellor Livingstone of New York, who was then acting as a sort of patron to a number of practical mechanics and engineers, among them John Stevens of Hoboken and Robert Fulton, obtained from the legislature of the State of New York exclusive rights and privileges for "navigating all the waters of that state by vessels propelled by fire or steam." On April 5, 1803, this act with all its rights and privileges was extended for twenty years and in it there was included the name of Robert Fulton. The act specified that within two years proof should be produced of "the practicability of propelling a boat of 20 tons capacity by steam at the rate of four miles an hour against the ordinary current of the Hudson." This proviso in the act was subsequently extended to April, 1807.

Robert Fulton, the son of a poor Irish laborer, was born in Pennsylvania in 1765. He studied mechanical engineering, draftsmanship and navel architecture, and in 1802, having become associated with Livingstone, he went to France to carry on his studies further. There with the assistance of Livingstone he built and experimented with one or two steamers. The first one through miscalculation was too light to float the machinery and broke in two in the middle. The machinery was fished out of the bottom of the river, the Seine just below Paris, and another vessel built which had a trial trip in August, 1804. She was, however, too slow and was unable to make much headway against the current and was considered a failure.

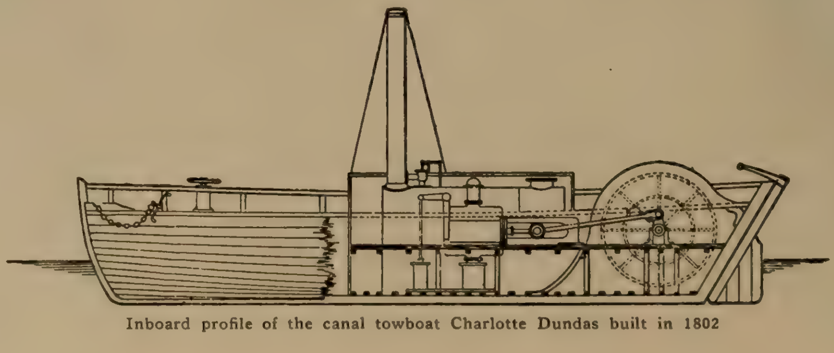
### The Charlotte Dundas

In the meantime in 1802 William Symington, the same whose experiments we described in the last installment of this series, had built in the Forth and Clyde Canal, Scotland, a sternwheel towboat which was working very successfully. On her trials this boat, the Charlotte Dundas, dragged two loaded vessels, each upward of 70 tons burden, against a strong head wind for 19½ miles in 6 hours. Without a tow the Charlotte Dundas made steady progress at the rate of 6 miles an hour.

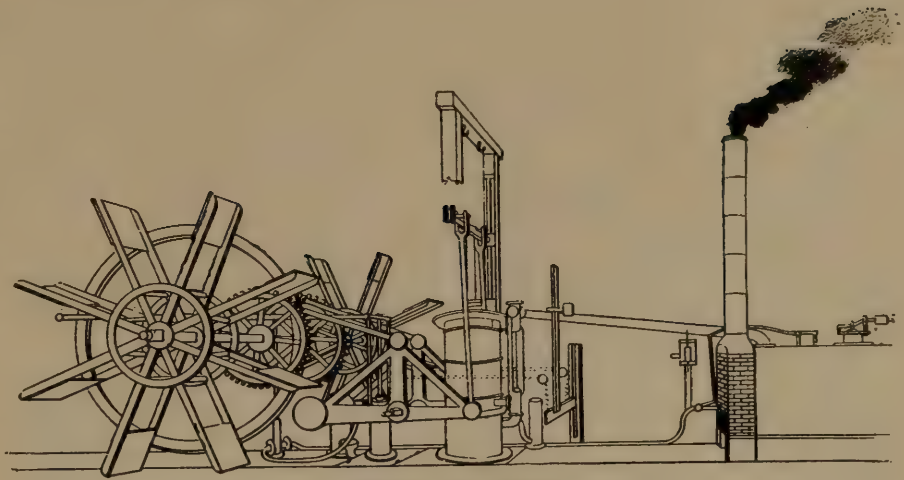
Her machinery was very simple. It consisted of a single cylinder 22 inches in diameter and with a piston stroke of 4 feet. The cylinder was horizontally arranged on the bottom of the boat and the piston connected to the crank of the paddlewheel shaft by a long conecting rod. Her rudder was worked by a rope, from a drum and wheel in the pilothouse forward.

Just after the failure of his experiments in August, 1804, Fulton paid a visit to Symington and expressed great interest and astonishment at the successful working of the Charlotte Dundas. Encouraged by this success, he returned to Paris and made a more successful experiment which attracted considerable attention from Napoleon and some of his ministers. The French men of science detailed by Napoleon to investigate the new steamboat turned in an adverse report, and Fulton returned to New York.

John Stevens of Hoboken in 1803 or 1804 built for himself a small experimental steamer in which he and his son, Robert L. Stevens, carried on many investigations into the various properties of steam and its application to marine propulsion. There can be no doubt that these two men were the real American marine engineers of this period. In



Inboard profile of the canal towboat Charlotte Dundas built in 1802 this experimental steamer they had tubular boilers. The engine, which was of the rotary type, was made under their direction and in their own shops at Hoboken. It set in motion two screw propellers (the first twin-screw boat ever built). The engine of this plant was preserved in the Stevens Institute of Technology at Hoboken, and in 1844 a new boat carefully modeled on the lines of the first was built and the engine installed in it. Without the altering of a single screw or any refitting, the engine worked successfully and in the presence of a committee from the American Institute it propelled the boat at the rate of 8 miles an hour. This second boat with the engine was on exhibition at Philadelphia at the Centennial Exposition.



ENGINES OF THE *CLERMONT*

By courtesy of *American Industries*

Drawing showing the arrangement of machinery on the first Clermont. This drawing is preserved in the Smithsonian Institute

### The Clermont

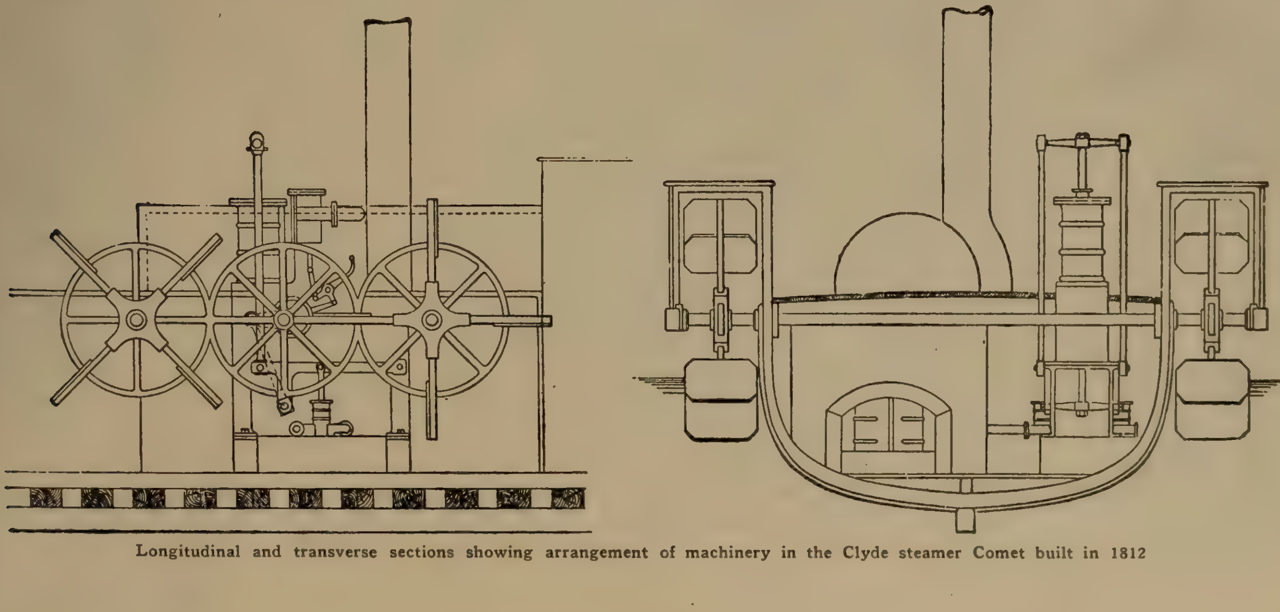
In the spring of that year Robert Fulton launched from the building yard of Charles Brown, New York, the Clermont, or, as some authorities will have it, the Katherine of Clermont, a steam vessel of 130 feet long, 8 feet beam, and 6 feet molded depth. The engine for this boat, which was built by Boulton & Watt of Birmingham, England, had a 24-inch cylinder and 3-foot stroke. The boiler was 20 feet long, 7 feet deep, and 8 feet broad. The sidewheels were 15 feet in diameter with buckets 4 feet wide dipping 2 feet into the water.

This vessel started on her first trip at 1 p. m. on August 7, 1807. Robert Fulton, with a few friends and mechanics and six passengers, was on board. She started amid the jeers of the crowd, and after a stop of a day at Clermont on the Hudson arrived at Albany in 32 hours' running time, a distance of 150 miles. She made several trips during the summer, keeping up an average of about 5 miles an hour against the current of the Hudson.

Like all steamers of that time and for many years afterward, the Clermont suffered on account of the disproportionate weight of the machinery. The boiler, of rectangular form, was set in masonry. The condenser was of the jet type and was installed in a large cold water cistern. The rudder was of the same form as that then used in sailing ships, and all together, being very logy, she could hardly be managed. The skippers of river craft, who were afraid of the danger to their business at the advent of steamships, took advantage of her unwieldiness to run afoul of her as often as possible when they thought they had the rule on their side. On several occasions the Clermont reached her terminal with one of her wheels missing. Therefore it was soon apparent that the wheels must be encased and the rudder changed to give better hold on the water.

During the winter of 1807-8 she was almost wholly rebuilt, and in the summer of 1808 she proved a very decided success, making her schedule with great regularity, so that by the end of that season she was much too small for the crowds who wished to take passage. Fulton and Livingstone, therefore, built two new vessels, the Car of Neptune and the Paragon, so that by the end of 1809 steam navigation on the Hudson was very well established.

During the same year in which the Clermont was launched John Stevens constructed a paddlewheel steamer, the Phoenix, which he had in successful operation on the Hudson just a few days later than the Clermont. Unable to operate commercially on the waters of New York State on account of the monopoly mentioned above, he conceived the bold idea of carrying the Phoenix under steam around Cape May to the Delaware and so to Philadel-



Longitudinal and transverse sections showing arrangement of machinery in the Clyde steamer Comet built in 1812 phia, and in June, 1809, he successfully completed this voyage. This was the first trial of a steamboat in the open sea. The Phoenix operated for many years between Philadelphia and Trenton.

It must be remembered in connection with all of these pioneer experiments in steam navigation, particularly in the United States, that up to as late as 1830 practically every steamer used in the United States burned wood for fuel.

The Philadelphia Times published in 1878 an interview with the Reverend Frederick Reynolds Freeman, whose father, Captain Freeman, and wife, together with the Reverend Frederick, then a babe in arms, had been passengers on the Clermont on her first trip. This clergyman had his father's journal in which the trip was described. "The Clermont moves out into the stream, the ponderous machinery thumping and groaning, the wheel frantically splashing, and the stack belching like a volcano. . . . The appearance of the strange vessel as she steamed up the river had a remarkable effect even in daytime upon the crews of craft passing by, but at night the Clermont spread consternation and terror on all sides. It was very dark. This apparent volcano belching showers of sparks, smoke and flame from the tall stack and moving steadily through the darkness in the middle of the river and accompanied by the rumbling and groaning of the laboring machinery was well calculated to strike terror into the hearts of sailors on the sloops and other craft coming down stream." Mrs. Freeman observed "a workman emerging from the engine room carrying in his hands a ladle filled with molten lead. With this he proceeded to stop up holes here and there in the rude machinery where steam was escaping." It was learned upon inquiry that the workman had been busily employed doing this same thing ever since the Clermont had left New York.

The great trouble with the steam engine and boiler in this pioneer period was the inadequate state of the metallurgical art to take care of even the very conservative temperatures and pressures which were then employed. Many engineers knew the advantages of high pressures and the expansive use of steam, and there is considerable literature of the period pointing these advantages out in a theoretical way, but practical metallurgy had not arrived at the point when high pressures could be safely applied.

In 1810 Robert Fulton began operating steam ferry boats in New York harbor. In 1809 Livingstone and Fulton sent a New York engineer, Mr. Nicholas J. Roosevelt, to Pittsburgh for the purpose of there building a flat boat and running down the Ohio and the Mississippi to New Orleans to make thorough investigation of the currents and conditions in both rivers from Pittsburgh to the sea. Mr. Roosevelt, accompanied by his bride, made the journey to Pittsburgh, built the boat, and spent six months on her, reaching New Orleans about December 1, 1809.

Mr. Roosevelt found coal on the banks of the Ohio and purchased coal fields and opened mines there. We are of the impression that this Mr. Roosevelt must have been an ancestor of Theodore, for he was so sure of the impression that his report would make upon the capitalists who had sent him out that he caused the coal to be mined and large stores of it laid up along the Ohio River so that it could be easily picked up by the steamboats which he was sure would soon be there to use it.

Mr. Roosevelt on his return submitted a report which so impressed Fulton and Livingstone that in the spring of 1810 Roosevelt was sent to Pittsburgh, and the first steamboat was built there under his supervision on the Alleghany side of the river close by a creek and immediately under a bluff called Boyd's Hill. This steamboat was 116 feet in length and 20 feet beam. The engine had a 34-inch cylinder. The ribs, knees, beams and planks were all cut in the virgin forest and rafted down the Monongahela River to the shipyard. The shipbuilders and mechanics were brought over from New York. The boat was named the New Orleans and was finally completed at a cost of about $38,000.

After a short experimental trip late in September, the New Orleans commenced her long voyage down the rivers with Mr. and Mrs. Roosevelt as the only passengers. The inhabitants of Pittsburgh informed Mr. Roosevelt that he might with perfect propriety be reckless of his own life but he had no right to imperil that of his wife, and with this sad advice ringing in their ears the couple left Pittsburgh behind them, and in company with a captain, an engineer named Baker, a pilot named Andrew Jack, six forecastle hands, two female servants, a man waiter, a cook, and an immense Newfoundland dog named Tiger began the voyage which might be said to have changed the relations of the Middle West to the Atlantic seaboard and might almost be said to have changed the destiny of the Mississippi Valley.

On the second night after leaving Pittsburgh the New Orleans rounded to opposite Cincinnati and cast anchor. On the night of the fourth day after leaving Pittsburgh they reached Louisville. Everyone in these then frontier cities was immensely delighted to see this first steamship, but everyone was sure that while she might make good headway down the river she could never go up. Mr. Roosevelt at Louisville invited a number of guests to dine on board the New Orleans while she was lying at anchor opposite the town. This company met in the forward cabin. Suddenly when the feast was at its height great rumblings were heard and a very perceptible motion in the vessel was felt. The company immediately concluded that the New Orleans had dragged her anchors and was drifting toward the falls of the Ohio. There was a rush to the upper deck where the company found that instead of drifting toward the falls, the New Orleans was steaming with good steam up the river and would soon leave Louisville far down stream. Mr. Roosevelt had provided this joke on his guests to convince them that they were wrong in their ideas of the power of steam, and great was their surprise and delight at such a demonstration of the success of the new power. It was found that there was not sufficient depth of water on the falls at that season to permit the vessel to pass over them safely. The New Orleans, therefore, returned to Cincinnati and after the Ohio had risen ran down stream again to Louisville and safely passed the rapids, making the entire trip from there on to New Orleans with scarcely an incident worthy of note. Thereafter this boat ran between New Orleans and the city of Natchez on the Mississippi, making regular trips.

For many years the Mississippi River steamboat traffic, of which we will have more to say later, was the most important in point of number of steamers and tonnage of any section of the United States. In 1858 816 steamboats were employed on the Mississippi and its tributaries, having a total tonnage of 326,443. At that time the best steamboats on the Mississippi had attained a maximum speed of 18 miles an hour, and boats had reached a size of around 2000 tons burden with machinery powerful in proportion.

In the meantime, on the other side of the Atlantic much work had been going on, particularly in and around the city of Glasgow on the Clyde, where Mr. Henry Bell in 1812 contracted with Messrs. John Wood & Company, shipbuilders at Port Glasgow, to build a steam vessel 40 feet long and 10 feet 6 inches beam, molded after his own model. This vessel was called the Comet and was fitted with a bell crank engine on the Watt principle driving a complete paddlewheel. The Comet made a speed of about 5 miles an hour, was of about 25 tons burden, and her engine had a nominal horsepower of three. The success of this vessel induced others to try similar experiments, and very soon there were a number of steamers plying on the Clyde. As early as 1814 there were five steamboats on the Thames River below London, and on practically every navigable river along the British coasts there were experiments going on with the new power.

### A Sea Voyage

In 1815 a steam yacht, the Argyle, built on the Clyde a year previously, made a number of sea trips. This boat was of 70 tons register, 79 feet long, 16 feet beam, and with engines of 14 nominal horsepower. She had paddlewheels 9 feet in diameter. After plying a year between Glasgow and Greenock, she was purchased by a London company intending to run her between London and Margate, and it became necessary to bring her by sea from the Clyde to the Thames. This work was entrusted to an ex-navy officer by the name of Dodd. He put boldly to sea in the Argyle from Glasgow in the middle of May, 1815, with a mate, an engineer, a stoker, 4 seamen, and a cabin boy. After a very stormy and adventurous voyage they were forced into Dublin on May 24. A passenger taken on board at Dublin has given a very explicit and detailed account of the remainder of the voyage. After putting in at several intermediate points, the Argyle arrived at Plymouth on June 6. Shortly afterward at Portsmouth the curiosity of the crowds was so great that they had to request the port admiral to assign them a guard to protect them from the mob. From Portsmouth they proceeded to Margate, which was reached July 11, the next day proceeding to Limehouse and thence up the Thames. The distance from Dublin to Limehouse by the route followed was 758 nautical miles, which was accomplished in 121½ hours with an expenditure of one ton of coal for every 100 miles. This vessel with her name changed to Thames worked for many years up and down the river from London.

The voyage just described is probably the first extended sea voyage under any such conditions ever made by a steam vessel.

The year 1819 was another epoch-making period in the history of steam navigation, for it was in May of that year that the Savannah made the trip across the Atlantic. This vessel, built in New York as a sailing packet to ply between that port and Liverpool, was purchased by certain gentlemen of Savannah who equipped her with steam machinery and paddlewheels with the idea of obtaining for their city the honor of being the first to cross the Atlantic with a vessel so equipped. The Savannah made this trip in 25 days, having worked her engine part of 18 days and depended wholly upon sail for the balance of the time. It would be hard to imagine the furor of excitement and the stimulus to the imagination which this voyage produced upon the marine engineering and shipping fraternity on both sides of the Atlantic. Hitherto steam navigation had been largely thought of only in connection with river transportation, but here in one stroke and almost the first sea voyage of a steamer she successfully navigates the 3500 miles of open ocean and shows the possibility of permanent, regular service between the two continents.

### David Napier

In this same year also there was begun by a young Scotchman, David Napier, a series of investigations which led to a complete revolution in the art of naval architecture as applied to steamships; also in the mechanical methods of the application of steam power to the propulsion of vessels.

Earlier than 1818 Napier had determined in his own mind the feasibility of applying power of steam to navigation in the open sea. In order to get at first hand a concrete idea of the difficulties to be met with through stormy weather, he took passage on several occasions in the stormy periods of the year on sailing packets between Glasgow and Belfast, a passage which then required the greater part of a week and is now accomplished in less than nine hours. The captain on one of these packets tells the story that he found this young man, Napier, constantly perched on the bow of the vessel intently gazing on the sea where it broke on the sides of the ship and quite heedless of the waves and spray that were washing all over him. At intervals he would come aft to ask the captain whether he considered the then sea a rough one. Finally when the breeze had freshened to a strong gale, he came aft again and, the captain still informing him that this was nothing out of the ordinary, he resumed his hazardous station until the storm had grown to such proportions that the seas were breaking all over the vessel. Coming back again to the captain he got the reply that the captain could not remember to have faced a worse night in the whole of his experience, whereupon young Napier turned away with a laugh, remarking to himself, "Well, if this is all I have to meet, I guess I can manage."

Coming back to Glasgow from this experience, he carried on a series of experiments with models of vessels in a small tank and was soon led to adopt the fine, wedge-like entrance of bow which distinguishes the modern steamer from the old sailing ship. As early as 1822 Napier introduced surface condensers, but through metallurgical failure was unable to get sufficient rapidity of condensation.

Summing up for the first twenty-five years of the nineteenth century, we find the steam pressure still hovering around 5 or 6 pounds, the speed of steamboats increased to about 8 knots an hour, the weight of machinery about 1800 pounds per I. H. P., the fuel consumption about 7 pounds per horsepower hour, the practicability of fairly long ocean voyages demonstrated, and regular coastal lines established and making fairly definite schedules, irrespective of weather conditions.

In 1823 there were about 300 steamboats on American waters. Between 1813 and 1823 160 steam vessels had been launched in England, none of which was as large as the larger American boats. Had our government given as much encouragement to the builders and operators of steamers in the period immediately succeeding 1825 as was given to the English builders and operators by the British government, Emerson would not have had to write about thirty years later that "steam was an Englishman."

# BUILDING FLOATING DRYDOCKS

## The Sun Shipbuilding Company and the Federal Shipbuilding Company Set Up Construction Record

By DAVID W. BARNES*

THE majority of the large shipbuilding establishments which grew out of the war emergency shipbuilding boom in the United States are now finding it necessary to equip themselves for the upkeep, repair and reconditioning of ships in order to find work through which to keep their organizations together.

"Ship repair" is rather an unsatisfactory term to describe this work, as it is not at all confined to repairs of damages, but as a steel bridge has to be frequently painted so a steel ship has to have similar treatment, and so do the wooden ships for that matter, and overhauling has to include the removal of marine growths from the underwater structures. Regular inspections of propellers, stern posts, etc., are necessary; engine and boilers require inspection and cleaning, and altogether this work can perhaps have a better name than "repairs."

"Deferred maintenance" has been suggested by a marine superintendent as a much more satisfactory title.

Quite recently two shipbuilding plants on the Atlantic Coast, the Sun Shipbuilding Company and the Federal Shipbuilding Company, decided to include repair work with their other activities, and upon careful consideration of various types of docks available selected the floating type as designed by William T. Donnelly of New York.

This type of dock is made with wooden pontoons built in standard sections and rigidly connected by steel wing walls. The Sun Shipbuilding Company desired a dock with a lifting capacity of 10,000 tons, and the Federal Shipbuilding Company one with a lifting capacity of 8000 tons and with provision made for future extension.

The wooden pontoons for these docks, as designed by William T. Donnelly, are built of Pacific Coast Douglas fir. They are all of the same size, 110 feet long, 41 feet wide, and 13 feet deep, and each contains 250,000 board feet of lumber. They are built usually on ways like a ship and are launched into the water. The requisite number of pontoons to form the bottom of the dock are then lined up rigidly with trusses and connected rigidly together by the steel wing walls, which are built in place on the pontoons.

For the Sun Shipbuilding Company's dock of 10,000 tons capacity eleven such pontoons were needed, and it was specified that the dock should be built in two parts, each of which should be capable of being used as an entirely separate dock or of being joined to the other section to be used as one dock with the full 10,000-ton capacity.

One of these sections was built with four pontoons and is 197 feet long over the outrigger, and is capable of lifting a ship 250 feet over all in length and of 3600 tons actual weight. The longer section has seven pontoons, is 323 feet long over the outrigger, and will lift a ship of approximately 6400 tons actual weight. Joined together as a single large drydock, the length is 522 feet 6 inches over the keel blocks, the width 110 feet, and the dock will lift 10,000 tons actual weight. It will take a ship approximately 525 feet long.

Launching pontoon No. 10 April 22, 1921, at the Sun Shipbuilding Company's yard, 33 working days from start

Lining up in the Federal Shipbuilding Company's fitting out basin the floating pontoons with trusses in preparation for the erection of the side wings

The Federal Shipbuilding Company's drydock, on the other hand, is built in one piece, has nine pontoons and continuous steel wing walls from end to end, the total length over the keel blocks being 377 feet, with a width of 110 feet and a total length of the wing walls of 462 feet 6 inches. This dock will

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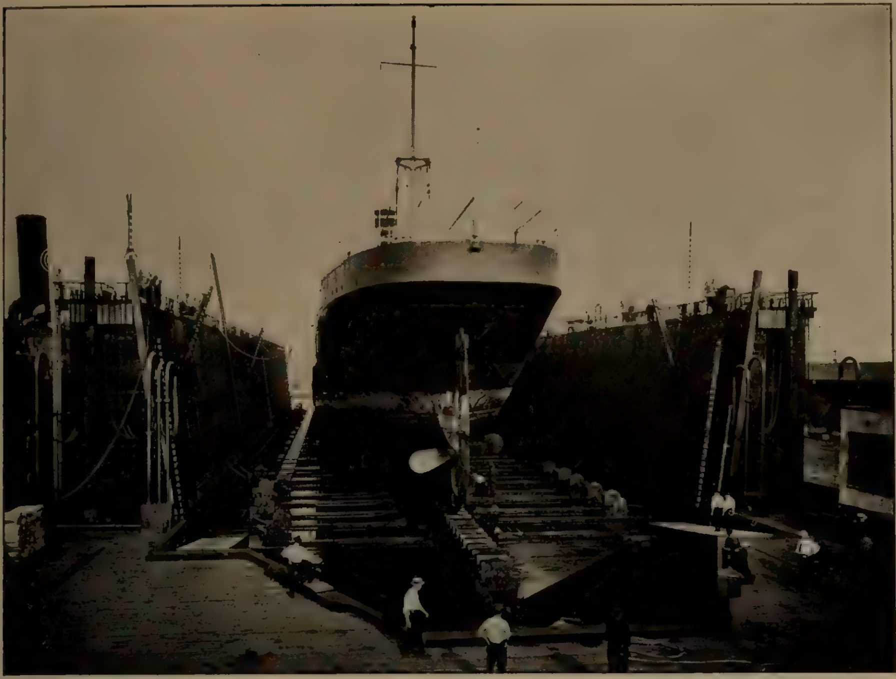
* The figures and facts embodied in this article formed the basis of an address delivered by the author before the Brooklyn Engineers Club December 8, 1921.



The floating dock of the Federal Shipbuilding Company with the Suholco up

lift a vessel weighing 8000 tons and will take a hull approximately 475 feet long. This dock having an uninterrupted alignment of keel blocks and a continuous side girder is in effect very much in the nature of a floating graving dock in that the solidity of the girder sections takes up any unbalanced strains that might otherwise be transmitted to the ship.

In ordering these docks the shipbuilding companies both specified that the actual work of construction should be done by their own organizations and workmen in their own yards under the plans and supervision of William T. Donnelly, acting as consulting engineer and construction expert. At the time Mr. Donnelly himself was away on a protracted yachting cruise, and it speaks volumes for the efficiency of his organization, built up through a long period of consulting engineering work in New York, that this drydock construction was carried through without a hitch and all that remained for Mr. Donnelly to do upon his return was to officiate at the opening of the Sun Shipbuilding Company's dock.

The consulting engineer established an organization at the shipbuilding plants, and on December 1, 1920, the Sun Shipbuilding Company began work on pontoon number one. The resident engineers on the work representing the consulting engineer were men of long experience in timber construction and were able to make many suggestions of time and money-saving ideas, resulting in better and quicker work by the shipbuilding companies.

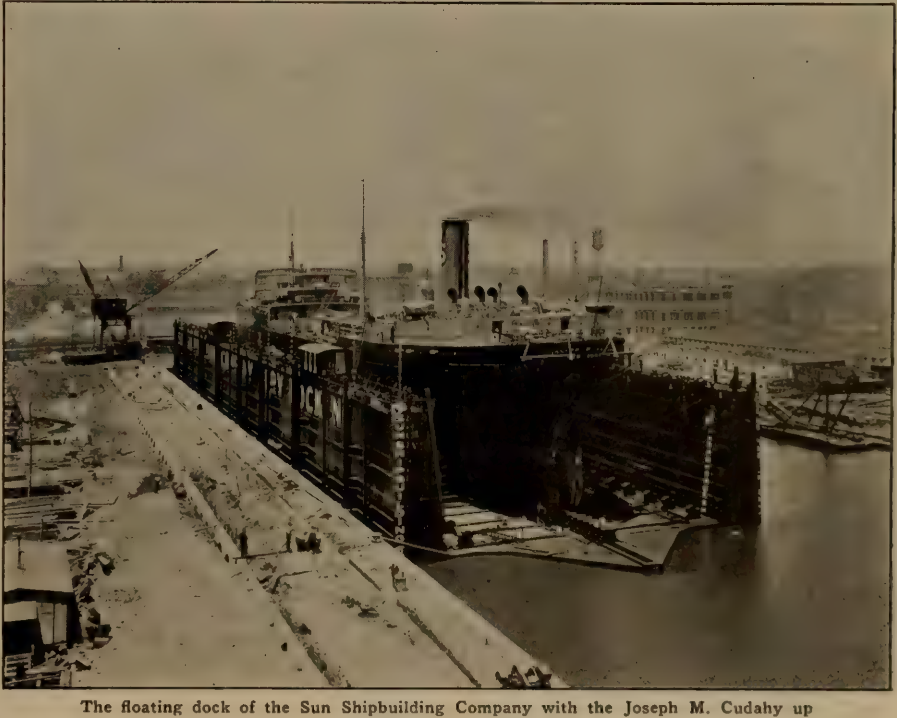
The last pontoon, No. 11, of the Sun Shipbuilding Company was launched April 28, 1921—time taken in construction 149 days. The Federal Shipbuilding Company began to work on its first pontoon January 5, 1921, and launched its ninth and last pontoon May 2, 1921—total construction time 117 days.

As soon as the pontoons were launched they were lined up, and work began immediately on the steel wings, working from one end. Both the shipbuilding companies had had abundance of experience in steel construction, and this work was comparatively easy for their regular organizations in fabricating, framing, plating and riveting.

The Sun Company began erection of the steel wings March 8, 1921, and completed the work May 27, 1921; elapsed time 80 days. The Federal Company began the steel work on March 26, 1921, completing June 11, 1921; elapsed time 77 days. The total weight of steel in the Sun drydock is 1750 tons and in the Federal drydock 1450 tons.

The arrangements for pumping are somewhat different on the two docks. There are twenty-two 12-inch centrifugal pumps on the Sun Shipbuilding Company's drydock, four on each side of the short section and seven on each side of the long section, thus making four groups of pumps, each pump in each group being connected by gearing to a main driving shaft. The two groups on the short section are driven by two 125-horsepower, 450-volt, 3-phase, 60-cycle, variable speed, slip-ring motors, while those on the long section are driven by two 200-horsepower motors of the same characteristics. These motors are all handled by remote control, the master controllers being located in a central control house on shore. The wiring on the drydock is all lead-covered cable installed in iron pipes. This wiring is connected by flexible cables to the wiring on shore through an iron standpipe with gooseneck.

The Federal drydock, on the other hand, is pumped by eighteen 12-inch centrifugal pumps, nine on each side, each pump being directly connected to a vertical type individual



The floating dock of the Sun Shipbuilding Company with the Joseph M. Cudahy up motor of 30 horsepower, 440-volt, 3-phase, 60-cycle, the motor being of the variable speed, slip-ring type. These pumps are also under remote control so arranged that any motor can be operated separately or all of them collectively under the control of an operator at a central station. Telltale vanes on the top of each motor show the dock master if the motor is running. The motors, individual controllers and master controllers were supplied by the General Electric Company, and the pumps by the American Steam Pump Company.

The construction of the Sun dock was started on December 1, 1920, as mentioned above, and the 10,000-ton tanker Joseph M. Cudahy was docked on June 11, 1921, six months and eleven days after placing the first timber on the blocks.

The Federal drydock was started on January 5, 1921, and the 6000-ton steamer Suholco was docked on June 25, 1921, five months and twenty days after the placing of the first timber.

The building of these two fine examples of American drydock engineering, each representing with the necessary pier work and dredging an investment of approximately $1,000,000 and each completely finished in six months, is an achievement of which the consulting engineer and both shipbuilding companies may be justifiably proud.

# THE LIVERPOOL LANDING STAGE

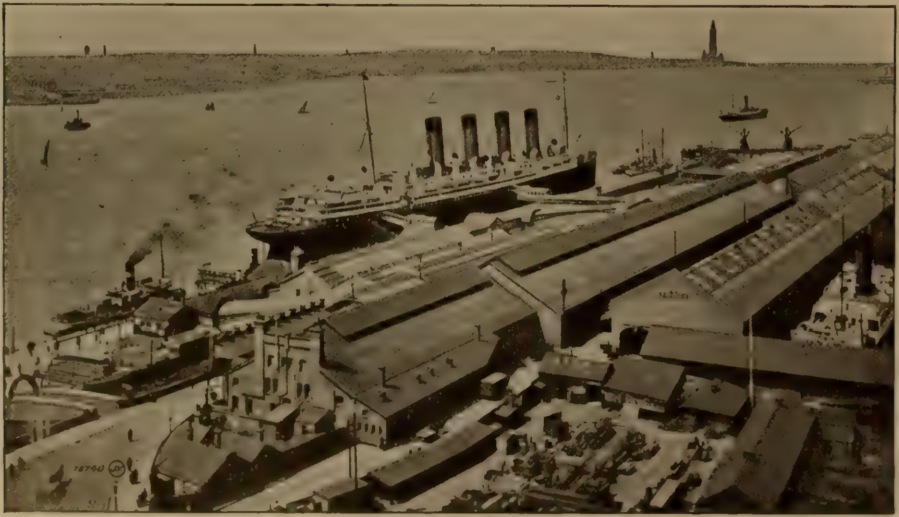
## A Simple But Very Effective Piece of Harbor Engineering

By R. Z. DICKIE

Trans-Atlantic liner leaving the Liverpool landing stage

WHILE at Liverpool on my recent trip to the United Kingdom, I was very much struck with the easy manner in which huge trans-Atlantic liners were dispatched with passengers and baggage from the Prince's landing stage at Liverpool. There was no more excitement or bustle, in fact, than there would be about the loading of an ordinary ferry-boat at the foot of Market street, San Francisco. Thinking that the readers of Pacific Marine Review might be interested in the manner by which this is accomplished, I have prepared the following notes which, with the pictures, will give a good idea of this rather wonderful, though simple, piece of engineering work.

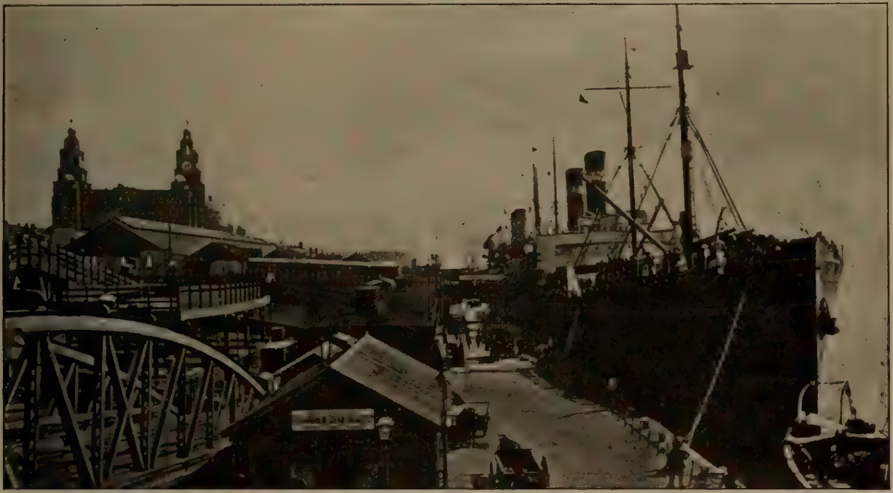
The rise and fall of the tide in the River Mersey on the Liverpool waterfront varies greatly. At neap tide the difference would be about 12 feet, while in the spring tides the difference between high and low water is as much as 33 feet, and there is at most times on the ebbing tide a current along the waterfront of about 7 knots. This large tidal range makes necessary the docking of ships in basins, and all cargo is discharged from ships so docked. It was early recognized, however, that the freight docks were not at all suitable for the loading of passengers, and as far back as 1847 a floating landing stage was constructed by the dock trustees. This was enlarged from time to time until in 1871 the various landing stages which had been constructed were all united in a new construction with a platform over 2000 feet in length and an average width of 80 feet. Just after its completion on July 28, 1874, this was destroyed by fire. An entirely new stage, the present Prince's landing stage, was then built and opened in 1876. Extensions have been made at various times to this until now the total length is approximately half a mile.


Liverpool landing stage from the north showing liner alongside

This huge floating structure is carried on 200 iron pontoons, each of which is about 80 feet long, 10 feet wide, and 6 feet deep. It is held in position by mooring chains and by a number of bridges, which are swiveled on the shore end and work on the landing stage with guided rollers. Most of the bridges are about 110 feet long, and their incline is practicable for foot passengers at all stages of the tide, but to facilitate the handling of mail and baggage at low water a specially constructed floating bridge 550 feet in length is provided near the center of the stage. Buildings and offices have been erected for postal, telegraph and telephone services, refreshment rooms, customs examining rooms, shipping offices, etc.

Ordinary ferry boats take their passengers directly from the stage level, which is from 6 to 8 feet above water. For the large trans-Atlantic liners movable gangways and high level bridges have been provided for taking first and second cabin passengers off at the various deck levels. One of the bridges has recently been converted into a double escalator worked by electricity with belts traveling in reverse directions so that loaded hand trucks may be carried either up from or down to the stage deck level.

The Atlantic liners load cargo and stores at their own docks, running out into the stream from five to six hours before sailing time, where the steerage passengers are put aboard from tenders. About an hour and a half before sailing time the vessel runs up to the landing stage, where the first and second-class passengers, baggage and mails are waiting ready to embark. The passengers have been segregated, their baggage checked over, their passports viseed and tickets examined, and are all arranged at the proper levels so that when the steamer pulls alongside they walk aboard with no confusion. The arrangements are so methodical that, so far as any passenger is concerned, there is no more confusion or excitement about this beginning of a trans-Atlantic trip than there would be if he were simply stepping aboard a trans-Mersey ferry to run over to Birkenhead.



Two views of the Liverpool landing stage. Above shows liner warping alongside and several of the numerous bridges. At left—view along the waterside of the landing stage showing liner alongside and various gangways.

# CAMP ROOSEVELT, BUILDER OF BOYS

THE general intelligent public is anxious to know about new ventures for the good of humanity. When new institutions are founded, the public is eager to learn about them and to aid in broadening the scope of their usefulness.

Too often, however, it takes a year or two to awaken the people to a knowledge of these new institutions for the betterment of mankind. And it is the first year or two that determines the permanency of such projects, for all too often, because of lack of public support, many worthy enterprises fall beneath the heavy burdens of starting out and are doomed never to carry out their program for the betterment of mankind.

For this reason the opening of the fourth season at Camp Roosevelt, the national educational encampment for boys, is to be heralded with joy, for it means that this eminently worth-while project has stood the test and is ready to go on with its work of building better boys for the country at large. The opening of Camp Roosevelt was attended with many hardships and difficulties on the part of the founder, Major F. L. Beals. The press and public at large soon grasped the magnitude of the Camp Roosevelt idea, and many national organizations sprang to its assistance. The War Department of the United States government gave it substantial aid in the way of the loan of tents, cots, and other needed equipment; the American Red Cross established a unit at the camp hospital, and a corps of doctors and nurses was assigned to look after the health and sanitation of the camp, as well as to give instruction in Red Cross and first aid. The Y. M. C. A. built a large "Y" hut and assigned eight "Y" secretaries to care for the general welfare and comfort of the hundreds of boys enrolled at the camp. The Winchester Junior Rifle Corps has built one of the finest rifle ranges so far put out by that superior concern and maintains a representative to give instruction in the care and handling of firearms.

Major F. L. Beals, commandant Camp Roosevelt

Added to such splendid support, the Chicago Board of Education, realizing that the Camp Roosevelt idea was one for the good of the public at large, and wishing to reach all worthy boys, made the camp a part of the Chicago summer school system. This one act alone gave Camp Roosevelt the stamp of approval of public organizations and did much to put it before thousands of parents of public school boys.

This boy-building on a man-sized scale has proved so successful that the camp will this coming season be transferred to a more adequate site near LaPorte, Indiana. A gymnasium, mess hall seating one thousand, kitchens, electric power plant, deep well, modern sewage system, large hospital and class-room buildings, bungalows, dormitories and recreation rooms are included in the new plant. The tract includes and surrounds Silver Lake, with sandy beaches, diving platforms, etc. Large fields provide for tentage, sports of all kinds, and parade ground. The ground is rolling, well wooded and drained, and the surrounding country affords opportunity for hikes in every direction.

The courses of training are sufficiently elastic to include boys of all ages and ideas. The older boys, from fourteen years up, may join the R. O. T. C. Division, which covers the military course more thoroughly than any other. Army officers have charge of this instruction. They are assigned to the camp by the War Department.

For the younger boy, from twelve to fourteen, the Junior Camp Division is provided where the mysteries of woodlore and campfire are taught. Competent scout masters supervise this training.

The summer school is one of the important correlative features of the camp. It will be seen that, on account of residence at the school, longer hours are available for classes, making more intensive work possible, which results in the completion in the six weeks of the eight weeks' course usually required to complete the work.

Camp Roosevelt boys practicing first aid work

This worthy project would not fulfill the purposes for which it was intended—namely, that of reaching the public—were it to cater to but a select few. In order to make it easily accessible to boys from all walks and stations of life, Major Beals made the camp a philanthropic undertaking. The necessary financial support is secured yearly through prominent Chicago business men, who appreciate the good work for which the camp was founded. Mr. Angus S. Hibbard, prominent Chicagoan, is chairman of the Camp Roosevelt Association. The boys who attend pay but a very nominal fee.

This vast camping enterprise could not be other than a successful venture, having as it has at its head a man of such sterling qualities of leadership and ability as Major Beals. The life work of Major Beals is to make of our American boy a better future man. Occupying as he does the position of professor of military science and tactics and supervisor of physical education in the Chicago high schools, he has plenty of opportunity to make a thorough study of boys and boy psychology throughout the year.

The camp is divided into two periods of three weeks each. Boys may attend either one or both of these periods, the first of which begins on July 5. Applications will be accepted at the Chicago Board of Education, 460 South State street, under whose auspices the camp is being conducted, with Major Beals in direct command.

# HEALING BY WIRELESS

RADIO has now taken a permanent place in the lives of those who go down to the sea as a means of livelihood. No longer need a seafaring man stricken with illness go without medical attention, no matter what size or nationality of the vessel equipped with wireless.

This humanitarian service has been made possible through the co-operation of the United States Public Health Service, which furnishes free medical advice to ships at sea via the coastal radio stations operated on the Atlantic and Pacific Coasts of the United States by the Radio Corporation of America.

Vessels desiring this advice can secure it promptly by addressing radiograms to any of the coastal stations with which communication is established. Such radiograms should be signed by the master and should state briefly the symptoms of the person or persons afflicted.

The medical advice will then be given by the Public Health Service hospitals and will be phrased in language intelligible to a layman. Although primarily intended for the benefit of ships not carrying physicians, these radio consultations may be held with ships' physicians and the hospital staffs.

The hospitals and coastal radio stations designated to furnish this service are: United States Marine Hospitals Nos. 38, 43, 61 and 70, communicating with the radio stations at Chatham, Massachusetts; Siasconset, Massachusetts, and New York City; United States Veterans' Hospital, No. 49, at Philadelphia, Pennsylvania, and United States Veterans' Hospital, No. 56, at Baltimore, Maryland, communicating with the radio station at Cape May, New Jersey; United States Marine Hospital, No. 19, at San Francisco, California, and United States Veterans' Hospital No. 24 at Palo Alto, California, communicating with the radio station at San Francisco, California.

The San Francisco station of the Radio Corporation of America has made arrangements to give messages in connection with this healing service right of way. Such messages are immediately telephoned to the United States Marine Hospital, San Francisco, or to Palo Alto, the telephone expense being absorbed by the Radio Corporation. This free long distance medical service provided by intelligent co-operation will be of immense advantage to the men who go down to the sea in ships.

# LEGAL ASPECTS OF C. I. F. DOCUMENTS

## Prepared by Division of Commercial Laws, Bureau of Foreign and Domestic Commerce

SELDOM has a foreign court ruling created greater consternation among American shippers than the decision of Justice McCardie on the status of "received for shipment" bills of lading and on the use of insurance certificates in lieu of policies in connection with documents under c. i. f. contracts. This decision was rendered in the now celebrated case of the Diamond Alkali Export Corporation vs. F. Bourgeois, which was heard before Justice McCardie, sitting in the King's Bench, London, July 1, 1921.

Judgment was rendered in favor of defendants and involved three points. The first point (purely incidental) hinged upon late delivery, and was decided in favor of the plaintiffs, the defendant's contention being met by the strike clause in the contract. The other two points dealt with the status of bills of lading certifying the receipt, in good condition, of goods for shipment, as distinct from bills of lading reading "received on board," and with the use of certificates of insurance under floating insurance policies, as documents tendered in compliance with the requirements of c. i. f. contracts. The affects of the adverse decision of Justice McCardie upon established practice in foreign trade are far-reaching. As a precedent it opens up the prospect of contract repudiation by buyers, not only in British dependencies, but anywhere else in the world, and herein lies its chief menace to American commerce.

### Points Way to Remedy

The ruling of Justice McCardie is neither bad law nor in itself unfair. The learned judge merely defined the status of "received for shipment" bills of lading and of insurance certificates in the light of what c. i. f. contracts call for under the Bills of Lading Act (1855) and of the Marine Insurance Act (1906), and declared that they do not adequately meet the seller's obligations. Yet he duly considered the established American commercial usage and pointed the way to a remedy by intimating that the difficulties indicated in the judgment could be easily, promptly and effectively met by the insertion of appropriate clauses in c. i. f. contracts.

It is an established business custom in international trade for a buyer in an over-sea country to demand in a c. i. f. contract that shipment be made within a certain time. He must have an approximate basis for judging the time when the goods reach him. Very likely, in the ordinary course of business, he had sold the goods to his own customer, agreeing to an approximate time of delivery. Or the goods may be wanted at destination for some special purpose and the unforeseen lateness of their arrival may lead to serious inconvenience and loss.

### What Seller Must Consider

On the other hand, it is perfectly proper for the seller to ascertain the time when the goods are expected to be ready for shipment and to make proper inquiry as to the schedule of vessels upon which shipment may be made within the time agreed on between seller and buyer. The seller ordinarily protects himself to the full limit of reasonable precaution against strikes, embargoes and government interference. He undertakes full responsibility for the factors over which he exercises control. If he is a manufacturer, he makes due provision for raw materials, for labor and for a working schedule enabling him to have the goods put on a freight train or any other form of conveyance to the port of shipment. He also books space on an ocean vessel to carry the goods to destination.

When it comes to ocean vessels the seller faces a problem in the fact that sailing schedules frequently depend upon factors beyond his control. There may be a steamer leaving the port of shipment for the port of destination at regular intervals. The seller delivers the goods to the dock in time for the scheduled shipment, but the company operating the vessel may either omit or postpone the sailing, or it may direct the vessel to proceed first to a series of other ports of call rather than direct to the port of destination, delaying the arrival of goods at destination.

### Lack of Foresight

Now in this connection let us examine the general tenor of c. i. f. contract clauses with regard to the obligation assumed by the seller to effect ocean shipment at a given time or within a given time. If in engaging space for the shipment the seller has not entered into a contract with the ocean carrier which would indemnify him against loss or responsibility under his contract for the failure of the vessel to sail on scheduled time, or for the substitution of a vessel, or for the deviation of the vessel in its journey from the direct course, he has assumed responsibility and obligations of a serious character for factors which he cannot control. In other words, he has either speculated or committed himself without realizing the seriousness of the obligations he has assumed, when he has in his c. i. f. contract the clause "shipment within thirty days," or "shipment in the latter part of the month of ———."

Sellers should rigorously avoid entering into any such oblgations without a provision exonerating them from responsibility if, after delivery to the ocean carrier, the shipment does not go forward as planned. There is no argument that would stand the test of business reason which would justify the assumption of such a responsibility by the seller. He has no right to take this risk upon himself. On the other hand, the seller whose c. i. f. contract lacks such a protective clause exposes himself to serious perils if he delivers goods to the ocean carrier in a happy-go-lucky fashion, trusting that shipment will be effected in due course as scheduled.

### Must Allow for Delays

There are several possibilities to be considered in this connection. Once in a while the buyer must make such rapid connections that the rigid observance of the promised time of shipment is of exceedingly great importance to him. He may have agreed to furnish the goods by a certain time in order to comply with time requirements under a government or other contract bearing penalty clauses for delay. In this case, in all fairness, he must assume the risks incident to delay. A merchant undertaking to procure goods abroad and to deliver them within a specified period of time must first consider how long it should take him to perform his contract, and he must not overlook the element of uncertainty in ocean shipment. He should not figure so closely that shipment on February 28 would be considered as complying with the clause in the contract calling for February shipment, while shipment on March 1 would appear as a violation of the same contract. Trading between distant countries is based by usage and comity upon substantial rather than technical compliance with obligations unless in altogether exceptional circumstances. The importance of rigid adherence to the time requirement of contract clauses should be pointed out by the buyer in these exceptional circumstances. A certain latitude is therefore provided in the ordinary run of contracts by the use of expressions as "end of the month" or "early part of the month" or "shipment in May, June, July." The seller should not be reasonably expected to shoulder the responsibility for the ocean carrier's schedule. It is his business to place the goods in the physical possession of the carrier in sufficient time to enable the latter to effect the shipment of goods in compliance with the intention of the contract.

Sometimes the buyer undertakes to sell goods bought abroad as merchandise afloat. The time element of delivery here is more or less a speculation in goods. Natural produce is frequently sold in this fashion. The same remarks apply in this case as in the preceding paragraph. But in the majority of cases it does not really make much difference to the buyer if, on a c. i. f. contract specifying shipment by the end of August, the goods are actually loaded on September 4. Taking the case of such shipment to the Dutch East Indies, for instance, where the weather element alone may cause a difference of several days one way or another, so slight a divergence from the contract clause cannot be of grave consequence to the buyer.

### Why He Repudiates

If under such circumstances the buyer seek to repudiate the contract it is generally due to the fact that it is convenient for him to do so. The price of the commodity may have dropped, or he may seek to extort an unwarranted concession. If he needs the goods badly, or in the meanwhile the world market price has risen, he will not seek to take advantage of the failure by the seller to adhere strictly to the wording of the contract by a few day's delay.

Now most of these c. i. f. shipments are made against payment by letter of credit, and the bank holding the funds is instructed to pay them against "documents." The documents include as the most important elements a bill of lading, as evidence of shipment, and an insurance policy as evidence of having protected the goods against loss or damage.

### Issuance of Bills of Lading

Due to the uncertainty of sailing dates and to other exigencies of maritime traffic, there has developed a practice of issuing bills of lading reading "received for shipment." This is a bill of lading indicating that the seller has complied with his part of the obligation and delivered the goods to the ocean carrier in good condition, but that the goods have not been actually put on board for one of several reasons. The vessel may not yet be in port, or the goods must await their turn in loading. Perhaps they are lighter packages which must be kept on the dock pending the stowing of heavier packages before they can be taken on board. The bill of lading may specify the steamer, reading as follows: "Received for shipment by SS. ——— or any subsequent steamer." The bill of lading in the case decided by Justice McCardie read: "Received in apparent good order and condition from ——— to be transported by SS. Anglia now lying in the port of Philadelphia and bound for Gothenburg, Sweden, with liberty to call at any ports in or out of the customary route, or failing shipment by said steamer, in and upon a following steamer, 280 bags of dense soda." The document did not even say "immediately following" nor indicate that the following steamer would be under the control of the carrier issuing the bill of lading. The justice found this bill of lading to be a mere receipt for the goods. The remedy, the justice ruled, lies in appropriate contract clauses accepting the "received for shipment" bill of lading. But the "received for shipment" bill of lading represents a thoroughly established usage in several trades.

In the Marlborough Hill case, tried in Privy Council, a broader view was taken by Lord Phillimore. With this view Justice McCardie disagreed, fearing that if the view of Lord Phillimore was carried out logically a mere dock receipt might be considered a bill of lading. This is avoided in the Liverpool cotton trade by the guaranty of shipments within twenty-one days. In the Australian wool trade it has been suggested that the bank accept the documents subject to a guaranty by the shipping companies that the vessel was in port, that the goods were under the control of the shipping companies, and that the shipowners would guarantee shipment by the particular vessel named in the document. "Shipped" bills of lading, or bills of lading reading "received on board," are impossible in many instances, and a rigid construction of Justice McCardie's decision is bound to work havoc with financing arrangements.

### Policy and Certificate Compared

Of equal importance to this decision by Justice McCardie was the view taken by this British jurist that a proper policy of insurance was not presented in the insurance certificate which accompanied the documents. The insurance certificate in question read as follows: "This is to certify that on ——— this company insured under policy No. 2319, for ———, $5790, on 280 bags, 58 per cent dense soda ash, N. Y. & L. test, valued at sum insured, shipped on board of SS. Anglia and other steamer or steamers at and from Philadelphia to Gothenburg. And it is hereby understood and agreed that in case of loss such loss is payable to the order of the assured on surrender of this certificate."

This certificate conveyed all the rights of the original policyholder and was declared to be subject to the full terms of the policy. Justice McCardie dissented from the ruling of Justice Dailhache in a previous case, in which the American certificates of insurance were admitted to be on a footing of their own, being accepted in Engand as policies. Justice Scrutton had also previously stated that a certificate of insurance issued by an insurance company under a floating policy, upon which document the company can be sued, would suffice in any case. Justice McCardie felt that the buyer in this case was at a disadvantage by not being able to examine the policy under which the certificate was issued. He further pointed out that the buyer could not assign the certificate for the purpose of bringing suit in the same sense that he could assign a policy, and he ruled that a document of insurance is not a good tender in England under an ordinary c. i. f. contract unless it be an actual policy and unless it fall within the provisions of the Marine Insurance Act (1906) as to assignment.

### Legislation May Be Needed

Justice McCardie distinctly realized the serious effect of his decision. He expressed his opinion "with diffidence and reluctance" and intimated that legislation might well be needed to enlarge the operations of the Bills of Lading Act (1855) and of the Marine Insurance Act (1906). He advised the employment of appropriate clauses in the contract itself to meet the difficulties indicated in the judgment.

It is understood that the sellers in this case have decided not to appeal, and so for the present Justice McCardie's decision is the law in England with regard to bills of lading and to insurance certificates. This state of affairs has led to much discussion and numerous conferences in the United States between important shippers and their advisers on legal aspects of transportation and insurance. The prevalent view is that for the present original policies of insurance must be presented under c. i. f. contracts to England. But the grave danger is always present that in other countries, first of all, of course, in British possessions, buyers under c. i. f. contracts may choose for ulterior motives to repudiate c. i. f. contracts under either pretext ("received for shipment" bill of lading or "insurance certificates"), claiming that these do not constitute proper documents called for under c. i. f. contracts and setting up the defense that the sellers had not complied with their part of the contract. The position of the banks disbursing funds under letters of credit is a very delicate one, and not only shippers, carriers and insurance companies but also banks are vitally interested in submitting the decision of Justice McCardie to review. In the face of abandonment of the appeal by the sellers in the "Diamond Alkali" case, a movement is on foot to bring about a friendly suit to settle the question. Justice McCardie in his decision pointed the way to such a suit by saying that if any custom and usage could be asserted, modifying the long and clearly established rights of a buyer under a c. i. f. contract, such points could be dealt with in some future action in the Commercial Court. The interest aroused in the disquieting situation created by this ruling is evidenced in the number of communications received by the Department of Commerce from shippers, law firms and insurance experts, soliciting its interest in finding a suitable remedy.

In the meanwhile trade bodies representing American shippers in several foreign countries have passed resolutions providing for the insertion in c. i. f. contracts of a clause agreeing to the acceptance of insurance certificates as equivalent to an insurance policy.

# DEEP SEA SOUNDINGS

## A New Device for Measuring Greatest Depths of Ocean

By WENDELL M. WHITING

THERE are several spots or areas of water in the ocean where the depths are so great that heretofore they have been unfathomable. One of these unmeasured areas is in the Gulf of Mexico, just north of Yucatan and known as "Sigsbee's Deep." Admiral Sigsbee, U. S. N., many years ago undertook a survey there, and while he did obtain some very deep soundings failed to reach the greatest depths because of the inefficiency of the then existing instruments.

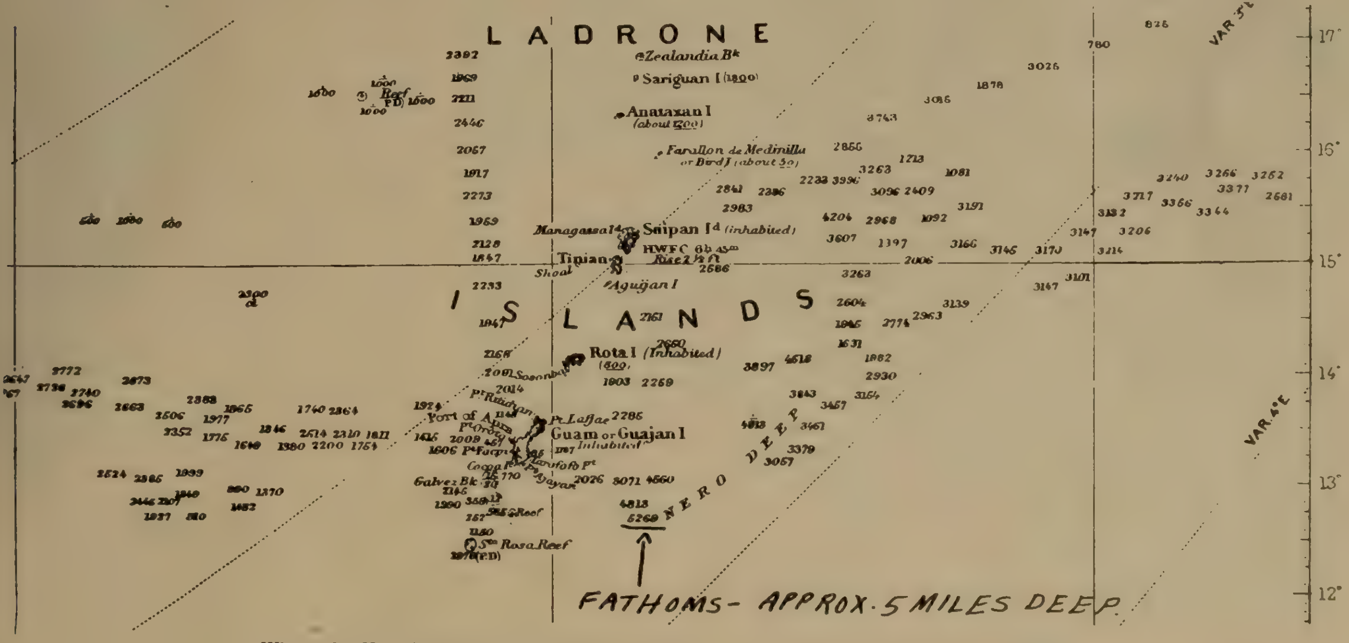
The Navy Department has now, however, perfected an instrument or machine which measures fathoms by sound echoes, and there is no limit to the great depths it will record.

The device, according to Secretary Denby, is very similar to the sound apparatus used by the United States Navy for submarine detection during the recent world war.

The principle upon which the instrument is based is that of creating a sharp, loud sound on board the ships and then waiting for the echo from the bottom of the ocean to be recorded. The time between the creation of the sound and the return of the echo is then measured to within one-thousandth of a second.

This new machine will not only be of great benefit in obtaining great depths, but can be worked much more rapidly than any of the latest sounding machines now in use.

Depths of such greatness as five nautical miles have been sounded on Nero Deep in the Pacific Ocean, southwest of Guam, which speaks well for the present sounding machines, but there has been some doubt as to whether these depths are absolutely accurate and some question as to whether there may not be even greater depths in this locality. This new instrument will permit of accurately checking up the soundings in this locality.



Where the Nero Deep lies off the Island of Guam. It is about five nautical miles in depth.

# IN THE GRAVEYARD WATCH

## A Sermon on Waves
## A Bit of Sentiment
## "Two Sister Vessels"

FOR A LONG TIME I have desired to preach a sermon on the probable (and improbable) heights of waves at sea; but, although I had the theme ready to hand, I lacked what I may describe as a text. Now, however, thanks to Captain F. L. Iverson, master of the steamship Mount Clinton, the lack is supplied, and I am prepared to lay lustily about me. Captain Iverson and Second Officer G. H. Holzman furnish me with my occasion in the following report, published in the Hydrographic Bulletin:

"On February 1, 1922, in latitude 48 degrees 32 minutes north, longitude 34 degrees west, encountered great sea waves from forty-five to forty-eight feet high from base to crest and 350 to 420 feet long. Wind southwest, 7 to 8; barometer 28.23; very low hanging clouds."

### "Mountain High" Illusion

It may be surprising to some persons that I should choose such an apparently moderate height as an excuse for a diatribe. During years out of mind our literature, classic and ephemeral, and our daily speech have been filled with such phrases as "waves mountain high", until the landsman takes such expressions seriously, and even the old mariner tells the waterfront reporters that seas ran to at least seventy-five feet, although he usually fails to specify whether that estimated height was from crest to general sea surface or to trough. The point is most important, for the distance from crest to trough or base would be just twice that from crest to the general surface; yet perhaps the question is altogether academic, for if I myself ever meet seventy-five-foot waves I shall be quite willing that they grow to 150 feet, inasmuch as I shall die promptly of fright.

## An Island Landfall

*I saw that island first when it was neither night nor morning. The moon was to the west, setting, but still broad and bright. To the east, and right amidships of the dawn, which was all pink, the day-star sparkled like a diamond. The land breeze blew in our faces, and smelt strong of wild lime and vanilla; other things besides, but these were the most plain; and the chill of it set me sneezing. I should say I had been for years on a low island near the line, living for the most part solitary among natives. Here was a fresh experience; even the tongue would be quite strange to me; and the look of these woods and mountains, and the rare smell of them, renewed my blood.*

*The captain blew out the binnacle-lamp.*

*"There!" said he, "there goes a bit of smoke, Mr. Wiltshire, behind the break of the reef. That's Falesa, where your station is, the last village to the east; nobody lives to windward — I don't know why. Take my glass, and you can make the houses out."*

*I took the glass; and the shores leaped nearer, and I saw the tangle of the woods and the breach of the surf, and the brown roofs and the black insides of houses peeped among the trees.*

*—The Beach of Falesa, by Robert Louis Stevenson.*

### Testimony of a Scot

The first evidence that I have to submit in the case is from Stevenson. By Stevenson I do not mean the writer, though my quotations are from his collected works, but his grandfather, who achieved great fame as a lighthouse engineer. This elder Stevenson, by name Robert, was constructing the Bell Rock light, when his vessel, the Pharos, was struck by a wind that finally settled into a northeasterly gale. Then this Scotchman, by training an engineer and so accustomed to precise estimating and clear thinking, and little given, I fancy, to romancing, despite the fact that his grandson was to win considerable fame in that amiable pursuit—then this Scotchman, I say, "saw indeed an astonishing sight. The sea or waves appeared to be ten or fifteen feet in height of unbroken water, and every approaching billow seemed as if it would overwhelm our vessel." Fortunately the gale subsided, and Mr. Stevenson went on deck. A heavy cross sea was running. "The height to which the waves rose in sprays when they met each other was truly grand." . . . Ah, ha, snarls a reader, now we shall find something mountain high. . . . "To estimate the height of the sprays," Mr. Stevenson goes on in his unbending manner, "at forty or fifty feet would surely be within the mark." But he has something far more severe to offer: "From observations often made by the writer, insofar as such can be ascertained, it appears that no wave in the open seas, in an unbroken state, rises more than from seven to nine feet above the general surface of the ocean" (or fourteen to eighteen feet from crest to trough).

Those who wish to pursue the subject farther and to satisfy themselves that the old lighthouse-builder, in his peregrinations about the coasts of stormy Scotland, had abundant opportunity to see ocean at its worst, may read his whole story of the Bell Rock in his grandson's "A Family of Engineers."

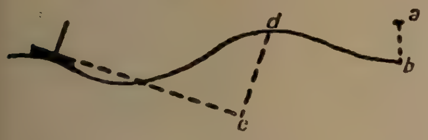
### Some Other Evidence

Although I might rest on my oars with a pleased smirk, I should be disloyal to truth if I stopped here. The fact is that other competent judges assign to waves far greater maximum heights. For example, I find that J. T. Jenkins, in his "Textbook of Oceanography", says that "Dumont D'Urville has recorded a wave 100 feet high in 1837 off the Cape of Good Hope. This was an estimate, not a measurement, and although many seafarers will agree with D'Urville"—(will they agree, Mr. Jenkins? Take away 100-foot waves and what is left to the ocean?)—"the estimate is probably too high. French marine officers measured many waves according to instructions given by Arago. The highest measured were in February, 1841, near the Azores, when from forty-two to fifty feet was recorded. In the enclosed seas the height of waves is much less."

For myself, I may say that, although I have never been in any particularly hard blow at sea and have not seen waves of unusual height, I have looked upon quite a bit of astonishing surf, both from shore and from a ship's boat when approaching exposed landings, and I must confess that even the heaviest breakers that I have seen did not appear to exceed a height of fifteen feet of solid water.

### Disconcerting Factors

It is quite true that Captain Iverson's figure is less than that of the French officers; but their heights were ascertained by measurement, and I assume that Captain Iverson estimated his. Accurate estimates, even accurate measurements, of sea waves are exceedingly difficult, for the reason that the greater the sea the greater the rolling and pitching of a vessel and consequently the more pronounced the disarrangement of the one source of reference; besides, one always is inclined to attribute too much motion to the sea and too little to the ship, as, for example, he is unaware of any pitching until he sees the horizon begin to cant at a crazy angle. In other words, even if the movement of a vessel be pronounced, the observer unconsciously persists in regarding the deck as level and in estimating heights accordingly. I may make my meaning clearer by reproducing a sketch from Mr. Jenkins' book, in which the true height of a wave is shown on the right and the apparent height, derived from a line drawn at right angles to the plane of a vessel's deck, appears on the left:



Moreover, the estimating of any distance, no matter how great or how small, is made immensely more difficult if the intervening surface is uniform, such as that of water, a flat prairie, a desert or a great snow-field. There exist, as it were, no landmarks; the unvarying uniformity defies the eye. In the case of the Mount Clinton, too, the low hanging clouds reported by Captain Iverson must have been confusing factors, as tending to increase the apparent height of the waves beneath. Finally, I may remark that the force of the wind, 7 to 8 on the Beaufort scale, or from a moderate to a fresh gale, probably has little or no significance. Wind creates waves, but the effect persists long after the cause has vanished, with the result that one often observes great seas in light airs or even in calms.

### The Ninth Great Wave

Mr. Jenkins explodes one illusion, which obtains rather generally: "Although there is a definite relationship between the period, velocity and length of a wave, there is none between these and the height." He then goes on to speak of the belief held by seamen that one wave usually is higher; the ancient Greeks spoke of groups of three as being highest, but most modern seamen say that the fourth or fifth exceeds the others and is followed by one or two of less height. Tennyson puts the idea thus in "The Coming of Arthur":

Wave after wave, each mightier than the last,
Till last, a ninth one, gathering half the deep
And full of voices, slowly rose and plunged
Roaring, and all the wave was in a flame.

Here I rest. I am not quite sure that I have proved anything so far as Captain Iverson's report is concerned: he certainly could summon authority to bear him out; but I believe that I have made it clear that waves "mountain high" exist only in the imagination. Yet we have a good deal to learn about the sea. Even the physicists, who clutter up whole pages with Greek letters in evolving the equations of wave motion, even they appear to be at a loss in explaining certain phenomena. Of their mathematics I know little and care less. The fact that theta equals the square root of delta divided by zero is not half so interesting as the sight of seas crossing each other's paths at right angles or of an oily current sliding through a heavy ground swell.

* * *

I FANCY THAT Thomas A. Graham, general manager of the Pacific Mail Steamship Company, would be greatly surprised if I were to accuse him of being sentimental; in fact, as he has earned a reputation as a shrewd, far-seeing business man, he might resent the indictment. Yet indict him I do, and I now set about to convict him.

A few days ago I saw a Shipping Board 535, operated by the Pacific Mail, steam from San Francisco Bay en route to Honolulu and the Orient. She immediately attracted my attention, because of her resemblance to the vessels of the "old" company, to the Manchuria and Mongolia in particular; and I discovered that she was painted in the style employed by the Pacific Mail for years: black hull and funnel, the former having a yellow stripe below the superstructure; white deck-house and buff masts. For years, as I said, all Mail vessels were painted after this plan; but when the company was reorganized in 1916, the old steamships having been withdrawn, a new scheme was adopted in which a light green was the prevailing tone.

### An Institution

Now it happened that I had seen the Manchuria depart from Honolulu on the last voyage of a Pacific Mail vessel from that port, and I also saw the Ecuador arrive on the first westbound sailing of the restored service. On the latter vessel floated the old Pacific Mail house-flag; many of her officers had served under Mr. Schwerin; but something radically wrong there was—the paint, of course. Much the same thought must have occurred to thousands of persons in the United States and Orient also, for in the days before the Shipping Board built its enormous fleet of ships, each of which flew the United States flag, the Pacific Mail was a good deal more than merely a steamship line: it was an institution, an American institution, in ports that saw little enough of our shipping. It was an institution of a long and honorable history (it has been engaged in the trans-Pacific trade for more than fifty years); so that, when the three new steamships blossomed out in their changed paint, the Pacific witnessed what it regarded as a regrettable break from old traditions.

### The P. M. Tradition

What those traditions were I may be pardoned for dwelling upon briefly. I recall a wharf employe of the old company, who observed a streak of rust staining the white paint of a certain admirable British liner and who remarked: "You'll see nothing like that on a Mail ship." I believe that he spoke the truth; at least, I looked for rust thereafter and saw none. One of the Pacific Mail officers who took the "Big Four" to the Atlantic told me that officials of the International Mercantile Marine were amazed at the excellent condition of the vessels, which were then eleven to fourteen years old. On the score of personnel, the company had built up an organization that was able to stand upon its own feet and give the Japanese and British a severe struggle; an organization that contained men who had spent a quarter-century or more in the Orient and who knew Manila, Yokohama or Hongkong as well as any foreigner could. These men were graduates of the Pacific Mail school—a hard school, doubtless, but one that had a singular ability to graduate first-class steamship-operators and to command their undivided loyalty. Scattered about the shores of the Pacific Ocean today are several gray-haired men who take pride in the fact that they learned shipping under R. P. Schwerin, in the days when the American merchant marine had few friends at home and fewer abroad, when dog ate dog and the devil was likely to get the hindmost.

### Found Guilty

As I began by observing, I fancy that Mr. Graham would be surprised if I were to accuse him of being sentimental; yet I plume myself on having made out a tolerable case against him; and surely he would not assert that he has restored the black, yellow and buff merely because of expediency. No, Mr. Graham has repaired the broken link of tradition, as he would have realized, as you and I would have seen, if we could have stood on a pier of Yokohama or Hongkong when the first vessel arrived in the old dress. Those people on the other side have long memories.

Something of the same sort, the vivifying of a tradition, has been accomplished in the restoration of the New York-San Francisco passenger service. I have no doubt that the management regarded New York as offering better business than did Baltimore; yet even here sentiment enters, because the Pacific Mail was founded to engage in the New York-Panama-San Francisco trade. The first steamship, the California, sailed from New York for Magellan October 6, 1848; called at Panama, on the Pacific side of the isthmus, and arrived at San Francisco February 28, 1849, in the height of the gold rush. Nineteen years later, in 1867, the San Francisco-Hongkong service was opened, and Honolulu was added as a port of call, if my recollection serves me, in 1871 or 1872. It is worth remembering, however, despite the greater importance of the trans-Pacific service today, that the Pacific Mail was founded to maintain sailings between New York and the Pacific, with transfer at Panama, and that in a very real sense the company's vessels have returned to their home port.

* * *

FOR MORE YEARS than any of us can look back upon, writers of both poetry and prose have found a favored theme in the strangely diverse fates of sisters. When an author lacked a better plot he always could twist that threadbare motive into something superficially new; and I, taking a leaf from the book of my betters, propose to say something of sister ships.

The recent destruction of the Northern Pacific at sea and the purchase by the Pacific Steamship Company of the Columbia (Great Northern) to replace her in the Pacific coastwise trade has caused me to ponder upon the queer pranks that fortune plays with twin vessels, for most of the ill luck that pursued the flyers built by James J. Hill seemed to fasten itself upon the Northern Pacific. It was she that went ashore at Fire Island in the winter of 1918, when she was returning several hundred sick and wounded American soldiers to the United States; now it is she that burns to the water's edge while on her way to the Sun yard to be reconditioned for the Pacific; and all the time the Great Northern was making a name for herself in widely separated seas. She had the unique distinction of being selected as the peace-time flagship of the Atlantic fleet (I should prefer to call her the admiral's floating office); she made, and I believe still holds, the record for the fastest round trip across the Atlantic; and I am quite sure that no vessel ever has approached her record voyage in the Pacific, that of 3 days, 18 hours and 51 minutes, Honolulu (Diamond Head) to the San Francisco lightship, in 1915, when she broke the Tenyo Maru's record by one minute less than 24 hours. This run of 23 knots an hour is not likely to be approached for a long time, for the simple reason that vessels capable of making that speed are not being constructed in large numbers, and most of them are on the Atlantic. It may be that the reason for the Great Northern's greater popularity with travelers, for her crowding the sister from the public eye, lay altogether in her more striking name; but that there was a difference, intangible though it may have been, is incontestable.

Instances might be multiplied. For example, there were the other vessels built by James J. Hill, the Minnesota and Dakota. The former is afloat today as the largest cargo-carrier of the world; the latter ended years ago on the rocks of Tokyo Bay, in a wreck that has supplied the theme for many a winter's tale. The Olympic is one of the great liners of the world; what happened to the Titanic on her maiden voyage is too well known to require comment. And so of the Mauretania and Lusitania. Sometimes, however, we discover sister vessels whose courses parallel each other strikingly, as was the case when the Manchuria grounded at Waimanalo, Honolulu, on the same day as the Mongolia struck the reefs of Midway Island. The theme is rather fascinating, but if I pursue it too far I probably shall find myself in confusion, so I retire while my brief remains unshaken.

THE SECOND MATE.

# FULL SPEED AHEAD

EDITED BY ANDREW FARRELL

## Marine Insurance

CHARLES F. HOWELL, Eastern Contributing Editor

**Full Speed Ahead: Marine Insurance, 249; Shipbuilding, 255; Shipping, 260; Rates and Freights, 44 (advertising section); Personals, 50.**

### Compromising With Lloyd's

Perhaps the dominant theme among marine underwriters of the East of late has been the problem of meeting the competition in this country of unauthorized foreign companies, and particularly of Lloyd's, London. The New York insurance department has found it impossible to interpret regulations governing insurance with unauthorized foreigners while the law abounded in apparently ambiguous and conflicting provisions. The whole problem revolved around the broker. So long as the American insuring public was willing to take cheap insurance and to patronize by preference brokers who could obtain it, there was no way of safeguarding our merchants from disaster at the hands of foreign insurers who liked to take money in rather than pay it out. Insurance Superintendent Francis R. Stoddard, Jr., arranged for a series of hearings with both fire and marine underwriters on this subject, and through the greater initiative of the marine men and the brilliant constructive work of Archibald G. Thacher, Wendell P. Barker and David Rumsey an agreement was prepared that met with the endorsement of the superintendent. This agreement is, in effect, a compromise, and will be introduced in the form of a bill before the New York legislature in the near future. Only under the condition that business with Lloyd's and other unadmitted insurance companies is placed by brokers especially licensed by the department, will those organizations be permitted to operate in New York. Brokers may not act in the capacity of agents or perform any agency functions, and must report all business placed with non-admitted insurers. The matter of taxation, one of the most important elements in competition with foreign marine companies who are assessed on the basis of net profits rather than premium income, as here, will go over until some subsequent session of the legislature, when more time and data are available. Licensed brokers must keep detailed records of business placed with unauthorized insurers and the records must be open at any time to examination by the department. Through this power of regulation the superintendent is allowed to prescribe forms of letters of advice, cover notes and policy endorsements, so that the assured will receive due notice that they are dealing with underwriting institutions not licensed in New York, who maintain no deposits there and who are not subject to service of process by American courts.

In order to afford Lloyd's an opportunity to present their side of the case to best advantage, Superintendent Stoddard arranged a special hearing at which Lloyd's was represented by no less an advocate than Sir Raymond Beck, a former chairman of Lloyd's. Sir Raymond bore a letter from the present chairman of that institution. He stated that Lloyd's underwriters collectively do not desire to continue business here illegally and that if they could be admitted they stand ready to pay taxes, maintain reserves and otherwise conform to our laws. But that if it were found impossible for Lloyd's to operate here legally, he would recommend their retirement from this market. Superintendent Stoddard made no decision on the subject, but stated that he would be glad to consider any plan on behalf of Lloyd's that might be submitted to him. It is anticipated that further interesting developments will result from Sir Raymond's visit to this country.

### Failure of City Equitable

The most staggering blow that has fallen upon the London insurance market in some while has been the disastrous collapse of the City Equitable Fire of that municipality. Its failure has carried down with it the fortunes of a great number of people of social prominence and of high business connections. Those responsible for the faults and flattering reports that have emanated from the company's head office during the past six months are in many instances fugitives from justice at the present time or in a state of physical collapse. Insurance Superintendent Stoddard of New York State has taken possession of the resources of the company's United States branch under a court order for the protection of the interests of policyholders and creditors in this country. The causes that led to the failure of the City Equitable arose largely from its extensive marine reinsurance operations, and also from the undesirable character of its investments which proved to be non-liquid and could not be realized upon when urgent occasion arose. It is thought by many that the failure of the company will probably end the treaty system of reinsurance as applied to marine underwriting in England. American shipowners and merchants will probably be found to be carrying small lines with the defunct institution and will doubtless be amply cared for by the funds now in the hands of Superintendent Stoddard.

### A Standardized Short Form

One of the most notable pieces of constructive work ever turned out by the American Institute of Marine Underwriters is the admirable draft, recently submitted, of a special open-cargo policy form. It is compact, simple and comprehensive and completely meets most of the objections urged against the use of the marine certificate. It will satisfy the bankers because it gives them the simplified contract they have long been demanding; it standardizes and makes uniform all important clauses and terms; and it effects substantial economy in office handling. Furthermore, it effectually does away with the objection raised by Justice McCardie of England to the substitution of a marine certificate for the original policy. The great question is, will the brokers accept it? Also, how many of

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the old-time underwriters are going to continue the use of the old clauses in preference to the new? The proposed clarified form is an institute recommendation only; there is nothing mandatory about it. Already many of the Eastern offices have signified their intention of adopting it. In any event it supplies a concrete record of policy development that will serve as a basis for further improvement should a desire for such arise in the future. The precise phraseology of the form is not available at this time, pending the suggestions and alterations of the bankers and brokers.

### Aetna Drops Ocean Marine

Marine underwriters throughout the country were astonished to learn March 1 of the decision of the Aetna of Hartford to suspend the acceptance of ocean marine risks during the calendar year 1922. This policy is effective as of March 1. The Aetna will continue its inland business as heretofore. This surprising decision came without an iota of warning, there having been no preliminary conferences with the company's marine managers in the various states. In the opinion of many such a determination on the part of so powerful an institution as the Aetna is nothing less than a severe blow at prevailing attempts to put an adequate underwriting market behind an American merchant marine. It is felt that serious difficulty will be encountered in attracting further capital into ocean marine underwriting in the face of such an adverse attitude on the part of a great company that has been writing it successfully for the past fifteen years. According to figures of December 31, 1921, filed with the New York insurance department, the Aetna's net ocean marine premiums for 1921 totaled $1,689,725; its net ocean marine losses paid in 1921 amounted to $2,168,930. At the close of last year the company had net ocean marine premiums in force in the sum of $1,017,438. In the absence of any definite information from the Aetna's home office, it is being generally concluded that the action of the company grew out of a substantial reduction in premiums on ocean marine during 1921 as opposed to a 100 per cent increase in losses. If the company were to average its accounts by three year periods, which is the only satisfactory way of measuring a marine insurance business, it would doubtless find that its ocean marine business has been making money rather than losing it. The company's decision affects all of its ocean marine writing offices in the United States, the most important of which are located at New York, Boston, Philadelphia, Chicago, San Francisco and Baltimore.

### Northern Pacific Problems

When the Admiral liner Northern Pacific was burned off Cape May in February, the London market sustained a loss of $1,200,000, and the rate is generally understood to have been ⅜ per cent for the trip to Chester, Pennsylvania, from New York City, and for builder's risk while undergoing repairs at the former place. It is now intimated that the underwriters will oppose liability on the defense of the unseaworthiness of the vessel based on the insufficiency of the crew. Newspaper reports have it that the vessel carried a skeleton crew of but sixty-eight men. One of the implied warranties of every marine insurance contract is the seaworthiness of the vessel and one of the elements of seaworthiness is an equipment of fuel stores and crew sufficient for the voyage on which she is to sail. These points have been made the basis of numerous suits, but each case has been decided on the requirements of the particular voyage. It is probable, therefore, that the owners of the Northern Pacific will have to prove not only that the crew on the fatal voyage was sufficient for actual navigation but also for the subduing of a fire should such arise in the ordinary course of the trip.

### Progress of the "Model Bill"

The so-called "Model" marine insurance bill for the D. C. passed the House with a few trifling amendments which were promptly accepted by the Senate. The measure now rests with the President for his signature.

### Insuring Chilled Fruit

There is a very extensive movement of fruit by vessels from the United States and Canada to Europe. The insurance on this commodity covers against damage from prolongation of the voyage or from break-down of the refrigerating machinery that keeps the chilled chambers of the vessel at a low temperature. The prolongation clauses generally indicate the number of days permitted a vessel for making her voyage, the maximum of time depending upon the type of vessel and length of voyage. The clause covering derangement or break-down of the refrigerating machinery insures against loss by freezing of fruit or deterioration resultant from accident to the refrigerating machinery or damage caused through negligence of engineers. This is a broad coverage, as it is in most cases very difficult to prove that damage had not occurred either through too much or too little refrigeration. Uncertainty as to the condition of the fruit at the time of its being laden on board the steamer at the Atlantic seaboard is another feature of importance, as most of it comes from the West and may have been en route or in storage for considerable periods of time before the trans-Atlantic insurance attached. There is no inspection service at the seaboard for determining the condition of the fruit at the time of exportation.

C. F. H.

INSURANCE COMPANY
Freights and Disbursements
STREETS, SAN FRANCISCO, CALIFORNIA

V. H. WOODRUFF, Manager, Southern California Marine Branch
230 BYRNE BUILDING
LOS ANGELES

CHARLES R. PAGE, Manager
ATLANTIC MARINE DEPARTMENT
72 BEAVER STREET NEW YORK

309 COLMAN BUILDING, SEATTLE, WASHINGTON

## A New Policy

San Francisco underwriters have received copies of a cargo policy drafted in New York and sent out apparently for the purpose of determining what would be the reaction of Western insurance men. Although the draft is tentative, so Pacific Coast underwriters believe, and therefore remains subject to modification, the reaction evidently is unfavorable. Those underwriters who were interviewed on the subject had some rather harsh words to say; others, however, might not find so much fault. But the fact is that the Pacific Coast has clung to British standards for a long time. Perhaps the reason for this leaning is found in the old days of wheat exporting, when that freight constituted an important portion of the business of the Pacific Coast, and the Wheat Tariff Association, in order to comply with the demands of the Corn Trade Association, the members of which were the principal buyers of Pacific wheat, employed what may be described as the typical London form. That policy, subject of course to various modifications, remains in general use, and San Francisco underwriters have not regarded New York's different proposals of change with too friendly an eye.

If the New York policy was designed primarily to comply with British requirements regarding the issuance of certificates under c. i. f. contracts, then some Pacific underwriters have anticipated it in a manner more satisfactory to themselves. A simple solution, adopted by at least one underwriter and considered by others, is to print a small policy, 9 by 12 inches, or the size of the old certificate, having no "backing" to cause unnecessary clerical work. This is a true policy, and no certificate, and it demands no more labor than did the latter form.

## The Aetna Withdrawal

So far as the Pacific Coast business of the Aetna is concerned, the withdrawal of that company from ocean marine underwriting will be gradual. At any rate, so far as the San Francisco office has been advised, the company will not reinsure its risks, but will carry them until they run out. In the case of cargo, most of the policies will have expired by May 1, but some business will not run out for six months or so and some hull policies, unless transferred, will continue in force for approximately a year from March 1, when discontinuance became effective.

J. A. Mathews, marine general agent of the Aetna on the Pacific Coast, has been associated with S. A. Livingston under the firm name of Mathews & Livingston. They have been Pacific Coast marine general agents of the Franklin Fire Insurance Company and the Universal Insurance Company of Newark, New Jersey, and since the discontinuance of the Aetna marine business have been appointed Pacific Coast marine agents of the Queen Insurance Company of America, heretofore represented by the Royal.

What Mr. Howell has to say regarding the feeling of underwriters at the withdrawal of the Aetna is echoed on the Pacific. Underwriters were amazed. "If it had been any other company than the Aetna" was heard frequently.

## No Discrimination Here

Pacific Coast underwriters are surveying with only a mild interest the to-do on the Atlantic regarding rates on cargo dispatched in Shipping Board vessels, for the Pacific is affected little, if at all. No discrimination has been made in the San Francisco market against Shipping Board vessels as such, said one underwriter, although it is true that in 1920 there was considerable discussion regarding the addition of an arbitrary ⅛ per cent against government tonnage. That movement died, however, and board vessels are accepted on their merits today.

Nevertheless, as another underwriter was at pains to point out, Shipping Board vessels generally are regarded with suspicion until they prove themselves. By that statement he meant that the haste of war-time construction had resulted in some admittedly poor work; but, he added, the better vessels, especially the large 535's operated by the Pacific Steamship and Pacific Mail, received the best rates, and the tests applied to board steamers were no different from those applied to privately-owned vessels: trade in which engaged, reputation and record of the operator, and so on.

## U. S. S. B. and Underwriters

W. J. Love, vice-president of the Emergency Fleet Corporation in charge of traffic, said, in discussing the board's campaign for better insurance rates, that a constructive move had been made by cargo underwriters. At the conclusion of a meeting held in New York in March Mr. Love was informed by Charles R. Page, manager of the Atlantic marine department, Fireman's Fund Insurance Company, that "there was a very representative attendance of underwriters interested in ocean cargo insurance, and that the meeting unanimously approved the appointment of a committee to carry out the suggestions, which had been made for the bringing about of a better considered rating on Shipping Board vessels. I feel confident that you will be gratified that your efforts have so soon borne fruit. The committee appointed consists of 18 men who represent the great groups of companies, both American and foreign. A number of sub-committees, probably six or seven, will be formed for the early investigation and consideration of the various lines established by your board."

"All we ask," said Mr. Love, "is that we be given as good a rating as our competitors. The action of the underwriters will systematize their work as it has never been done before, in the matter of marine insurance on government ships. The work of the underwriters' committee will be started at once, and Mr. Page has been appointed its chairman."

The committee consists of: Hendon Chubb, Chubb & Son; William H. McGee, William H. McGee & Company; Louis F. Burke, George H. Smith & Hicks; E. W. S. Morren, Carpinter & Baker; W. L. H. Simpson, British & Foreign Marine Insurance Company; J. E. Hoffman, Royal Insurance Company; F. H. Cauty, Thames & Mersey Marine Insurance Company; G. C. Morris, Insurance Company of North America; G. Breaker, Shippers' Underwriting Agency; C. R. Ebert, Automobile Insurance Company; Samuel Bird, Talbot, Bird & Company; W. J. Roberts, Standard Marine Insurance Company; S. D. McComb, Marine Office of America; C. A. Orr, National Union Fire Insurance Company; D. F. Cox, Appleton & Cox; A. F. Post, Rossia Insurance Company; J. Spier, Trans-Marine Underwriting Agency; W. W. Parsons, Atlantic Mutual Marine Insurance Company; George C. Owens, Globe & Rutgers Insurance Company; Charles R. Page, chairman, Fireman's Fund Insurance Company.

## Foamite and the British

In its issue of February 16, Fairplay pays the following tribute to Foamite Firefoam:

"The fire smothering capabilities of Foamite Firefoam were convincingly demonstrated at a fire which broke out recently at Liverpool in the oil tank steamer British Rose. The outbreak is believed to have been due to a leak from the fuel bunkers which contained from 8000 to 10,000 gallons of oil, and the burning liquid flooded the stokehold and within a few seconds flames were leaping to a great height. For some time before the arrival of the brigades the crew endeavored to subdue the fire with water, but were driven back by the heat and the fumes, and the conflagration extended under the boilers and threatened to spread the whole length of the ship. Water is worse than useless to quench burning oil, but in this instance the brigades used it effectively in order to raise the blazing oil to a level at which it could be dealth with. The stokehold was flooded with water and the oil eventually brought to the required height. Greater volumes of water were then employed to drive the flames into a corner, where Foamite Firefoam was poured upon it. Foamite Firefoam is contained in large cylinders, and one of its peculiarities is that a larger quantity comes from the containers than the containers hold—a paradox which is explained by the fact that the fluid as ejected is generated by a chemical reaction within the cylinder. The fluid resolves itself into a thick blanket-like foam and as it settles on the blazing oil it excludes the air and muffles and extinguishes the flames. A very large quantity of Foamite Firefoam was required to deal with the outbreak on the British Rose, but the success of its application was complete within a very short time. A number of steam pipes were destroyed in the stokehold, but otherwise the flames did surprisingly little damage."

## IMPROVEMENT

A statement made recently in Pacific Marine Review, to the effect that underwriters detected a generally improved tone in importing and exporting, is borne out by the report of the Federal Reserve Bank, San Francisco, for February. Although foreign trade of the Pacific Coast in 1921 was less in value and volume than in 1920, says the bank, the last six months of 1921 witnessed improvement in both exports and imports. During the whole year 1921 exports decreased 40.1 per cent and imports decreased 52.4 per cent in value as compared with 1920; but the decline of the last six months was much less than that of the first half-year; and December, 1921, as compared with December, 1920, brought an increase in exports of 1.07 per cent and in imports of 154.6 per cent. It appears probable that the volume of trade, as well as the value, was on the mend in the last quarter of the year. Another excellent sign is visible in the Panama Canal's statistics, which report an increase in iron and steel moving from the Atlantic to the Pacific from 50,488 tons in September to 81,168 in December. This signifies that the Orient has resumed buying.

It is evident that the British Rose was not equipped with Foamite apparatus; had she been, the fire would not have gained the headway that it did, nor would it have been necessary to pour the composition upon the fire from cylinders. Foamite still has worlds left to conquer on the other side of the water. The conquest should be immensely facilitated by such incidents as that of the British Rose, for no one who has seen Foamite extinguish a blaze in an incredible time is likely to forget its efficacy.

## Insurance Brevities

Frank B. Hall & Company, New York, have removed their offices to 67 Wall Street.

* * *

The Pacific Steamship Company's steamship Admiral Farragut has been libeled by Captain C. H. Cates, who beached her February 19 after she had broken away from the Wallace yard, where she was undergoing repairs. Captain Cates asked $26,000, one-tenth of her estimated value. A libel has been filed by Swayne & Hoyt against the steamship Craster Hall following a collision at Los Angeles February 23.

* * *

At the annual meeting of the Board of Marine Underwriters, San Francisco, held February 28, Louis Rosenthal was re-elected president; H. J. Knowles was elected vice-president, succeeding J. R. F. Servaes; Edward L. Woods was re-elected secretary and J. Wadington was made assistant secretary. Mr. Woods, now in England, recently sought to resign, but the board declined to accept his resignation and extended his leave of absence for six months.

* * *

The Alaska Steamship Company and the San Francisco & Portland Steamship Company, owner and operator of the steamship Alaska when she sank last August, have filed in the United States District Court, Seattle, a petition for limitation of liability. The petition gives $3227 as passage money collected and $3258 as freight money that would have been due.

* * *

John Martin, representing the American Bureau of Shipping, recently stationed in Shanghai, has gone to Japan to act for the bureau in its dealings with its associated body, the Imperial Japanese Marine Corporation. His offices will be in Yokohama.

* * *

By the end of May, thirty-two foreign-built vessels of 183,250 tons (whether net or gross does not appear) will have been placed under Japanese registry since the first of the year. Shipowners expect to receive a good deal of work in reconditioning and altering them.

# CALIFORNIA MARINE INSURANCE, 1921

The following figures, taken from tabulations of the insurance commissioner, California, include ocean marine and inland navigation and transportation.

| | Net Amount Written | Net Premiums Received | Net Losses Paid | Net Losses Incurred |
|---|---|---|---|---|
| Aetna | $ 51,375,294 | $ 155,957.05 | $ 326,562.01 | $ 211,517.67 |
| Agricultural | 5,772,880 | 34,152.27 | 39,898.84 | 1,561.58 |
| Alliance Insurance, London | 89,556,589 | 20,962.65 | 18,066.95 | 18,066.95 |
| Alliance Insurance, Philadelphia | 8,377,723 | 64,185.69 | 45,218.84 | 46,093.84 |
| American & Foreign Marine | 112,709,561 | 21,135.26 | 24,437.11 | 28,855.34 |
| American Eagle Fire | 6,207,697 | 1,016.58 | 6,538.61 | 5,832.70 |
| American Equitable | 12,482,000 | 55,270.24 | 23,126.99 | 36,729.11 |
| American Insurance | 237,796 | 1,458.01 | 1,148.01 | 1,148.01 |
| Automobile | 64,171,259 | 233,064.95 | 166,221.32 | 105,727.44 |
| Boston | 6,545,433 | 66,683.78 | 50,277.59 | 48,237.59 |
| British & Foreign Marine | 44,882,235 | 124,696.04 | 51,254.07 | 77,357.30 |
| Camden Fire | 5,177,637 | 51,592.83 | 46,324.92 | 50,907.92 |
| Canton | 29,430,620 | 83,519.80 | 115,423.12 | 86,306.06 |
| Columbia Insurance | 684,996 | 4,597.28 | 5.10 | 65.10 |
| Commercial Union Assurance | 284,096,434 | 75,327.15 | 193,487.99 | 193,487.99 |
| Concordia | 946,410 | 10,875.73 | 2,444.20 | 2,410.20 |
| Continental | 32,885,799 | 5,344.45 | 15,368.76 | 18,894.81 |
| Eagle, Star & British Dominion | 24,141 | 17.35 | .............. | .............. |
| Federal | 212,336,901 | 109,619.81 | 116,743.19 | 120,429.43 |
| Fidelity-Phenix | 25,087,305 | 4,703.55 | 15,100.03 | 14,687.65 |
| Fire Association | 1,107,428 | 4,005.25 | 3,545.78 | 1,195.88 |
| Fireman's Fund | 195,279,072 | 452,419.19 | 647,719.46 | 453,051.98 |
| Firemen's | 104,876 | 868.63 | 1,117.99 | 1,054.68 |
| Fonciere Marine | 6,228,003 | 30,997.34 | 33,442.30 | 24,694.30 |
| Franklin Fire | 3,615,947 | 68,714.00 | 7,717.28 | 8,086.28 |
| Glens Falls | 2,039,982 | 30,237.80 | 28,615.82 | 30,169.71 |
| Globe & Rutgers | 10,422,812 | 115,527.87 | 238,681.54 | 238,681.54 |
| Great American | 29,202,469 | 132,053.01 | 139,588.07 | 137,672.51 |
| Hanover Fire | 4,017,725 | 1,089.05 | 1,834.67 | 1,790.36 |
| Hartford | 46,902,075 | 143,146.86 | 84,453.39 | 84,150.48 |
| Home | 177,116,536 | 171,287.14 | 219,216.71 | 202,125.62 |
| Hudson | 1,900,541 | 20,334.90 | 2,617.09 | .............. |
| Importers & Exporters | 10,696,667 | 53,903.49 | 35,463.12 | 40,012.49 |
| Indemnity Mutual Marine | 1,081,069 | 5,451.12 | 2,779.70 | .............. |
| Insurance Company of North America | 76,403,238 | 379,930.86 | 212,043.38 | 180,743.38 |
| Knickerbocker | 5,349,400 | 23,687.24 | 7,537.30 | 11,873.94 |
| Liverpool & London & Globe | 8,664,803 | 48,966.65 | 33,431.44 | 35,146.44 |
| London Assurance | 27,256,866 | 39,938.61 | 78,398.65 | 75,825.01 |
| London & Scottish | 3,866,922 | 13,565.17 | 1,347.18 | 1,318.46 |
| Marine | 128,654,340 | 23,412.47 | 210,530.76 | 218,411.80 |
| Maritime | 5,116,297 | 56,339.09 | 44,648.76 | 16,472.00 |
| Massachusetts Fire & Marine | .............. | .............. | *4,958.41 | 869.81 |
| Mercantile | 4,000 | 87.00 | 1.53 | 2.53 |
| National Liberty | 104,935 | 122.38 | .............. | .............. |
| National Union | 7,016,056 | 53,200.60 | 31,249.59 | 33,985.11 |
| Newark Fire | 4,105,912 | 11,117.89 | 15,940.45 | 6,106.45 |
| New Hampshire Fire | 64,440 | 341.25 | 117.68 | 200.00 |
| New Jersey Fire | 1,210,364 | 10,095.25 | 5,249.99 | 7,314.00 |
| New Zealand | 2,613,719 | 12,529.38 | 13,520.42 | 11,852.42 |
| Niagara | 7,539,415 | 41,518.53 | 78,660.38 | 87,572.85 |
| North British & Mercantile | 28,500 | 850.25 | 46.86 | 48.86 |
| North China | 5,896,281 | 37,947.44 | 36,613.77 | 31,753.78 |
| North River | 1,218,335 | 7,550.38 | 9,675.66 | 2,738.00 |
| Norwegian Atlas | 1,413,225 | 17,794.11 | 2,624.38 | 12,636.38 |
| Norwich Union Fire | 3,989,924 | 30,429.67 | 9,564.32 | 20,966.32 |
| Ocean Marine | 18,314,953 | 22,680.13 | 55,885.73 | 1,567.66 |
| Old Colony | 753,919 | 2,745.68 | 4,030.93 | *364.07 |
| Pennsylvania | 4,000 | 73.00 | .............. | .............. |
| Phoenix Assurance, London | 1,967,735 | 39,611.39 | 46,918.31 | 6,481.31 |
| Phoenix Insurance, Hartford | 38,400,371 | 151,703.40 | 140,513.77 | 168,419.18 |
| Providence Washington | 17,838,266 | 104,752.77 | 77,631.76 | 67,487.29 |
| Queen | 33,269,798 | 9,798.04 | 9,973.77 | 6,723.77 |
| Queensland | 5,132,879 | 27,459.52 | 33,378.69 | 35,997.32 |
| Reliance Marine | 46,998 | 311.40 | 287.20 | .............. |
| Royal Exchange Assurance | 8,615,607 | 24,980.78 | 38,672.84 | 23,722.71 |

| | Net Amount Written | Net Premiums Received | Net Losses Paid | Net Losses Incurred |
|---|---|---|---|---|
| Royal | 5,876,999 | 23,783.53 | 17,738.68 | 16,899.68 |
| Scandinavian American Assurance | 21,096,394 | 109,502.64 | 131,898.06 | 106,923.33 |
| Sea | 17,656,392 | 65,391.25 | 35,159.77 | 42,548.33 |
| Security | 5,672,663 | 28,909.30 | 68,802.17 | 80,647.17 |
| Scandinavia | 13,061,106 | 89,071.75 | 88,948.06 | 102,044.77 |
| Springfield Fire & Marine | 111,495 | *1,209.65 | | |
| St. Paul Fire & Marine | 12,059,419 | 60,685.61 | 54,621.86 | 39,127.60 |
| Standard Marine | 28,947,732 | 131,386.92 | 142,361.15 | 5,092.39 |
| Switzerland General | 24,593,912 | 115,108.90 | 80,178.12 | 80,341.65 |
| Thames & Mersey Marine | 8,125,556 | 70,210.10 | 25,638.44 | 19,500.00 |
| Tokio Marine & Fire | 1,081,582 | 4,505.81 | 12,082.51 | 15,808.18 |
| Union Hispano Americana de Seguros | 2,439,413 | 8,878.18 | 9,105.58 | 10,696.97 |
| Union of Canton | 46,088,918 | 150,904.34 | 79,796.65 | 105,351.13 |
| Union Marine | 65,483 | 51,196.87 | 64,315.78 | 75,910.78 |
| United States Fire | 255,100 | *751.61 | 2,783.87 | 2,783.87 |
| United States Lloyds | 13,588,562 | 42,027.27 | 40,817.23 | 38,375.74 |
| Universal | 2,053,506 | 9,973.79 | 8,037.00 | 8,199.36 |
| Utah Home Fire | 1,484,438 | 16,675.93 | 7,257.25 | 6,795.35 |
| Vulcan | 5,406,203 | 38,403.76 | 24,648.81 | 25,186.27 |
| Western Assurance | 14,048,400 | 79,939.90 | 65,336.66 | 74,407.31 |
| Westchester Fire | 5,642,073 | 36,096.62 | 21,028.83 | 21,381.93 |
| World Auxiliary | 2,000 | 7.49 | | |
| Yang-tsze | 9,237,867 | 68,274.05 | 63,299.22 | 47,324.41 |
| Totals | $2,156,856,112 | $4,838,875.21 | $5,006,179.34 | $4,322,560.71 |

The Steamboat-Inspection Service, it is reported in Seattle, will appeal from the decision of United States District Judge Jeremiah Neterer denying the right of Captain William Fisher, supervising inspector, to punish Captain John Alwen, master of the steamship West Hartland, which sunk the Governor in a collision last year. Judge Neterer's decision was published in full in the March number of Pacific Marine Review.

* * *

Judge Neterer has issued an order for the sale of the West Hartland at Seattle April 3. Suit was brought against the vessel and the Emergency Fleet Corporation by the Pacific Steamship Company for $2,500,000; and the Shipping Board petitioned for limitation of liability to the value of the vessel.

* * *

The board of supervising inspectors, Steamboat-Inspection Service, has decided that proponents of a plan to require all vessels to install submarine-bell apparatus did not make a sufficient showing at a recent hearing to justify the board recommending necessary legislation.

* * *

At the middle of February the Imperial Japanese Marine Corporation had classed 20 vessels of about 88,600 gross tons and at that time was classifying 14 vessels of 48,800 tons.

Two fires are reported by Kobe. The N. Y. K. steamship Kaga Maru arrived from Calcutta February 11 with a fire in No. 1 hold. About 3400 bales of cotton were burned or damaged, the loss being about $60,000. The Blue Funnel steamship Epmaeus arrived from Shanghai February 3 with fire in No. 6 hold. Damage was about $30,000. A collision occurred at Kobe the day before between the N. Y. K. steamship Inaba Maru and the Blue Funnel steamship Elpenor, the bows of both vessels being damaged.

* * *

President Harding has approved the model insurance bill for the District of Columbia.

* * *

According to returns of Lloyd's Register, during the quarter ending June 30, 1921, 58 steamers of 93,516 tons gross, and 30 sailing vessels of 24,306 tons net, were totally lost, condemned, etc. Losses by Spain and Greece were high, the former losing 10 vessels of 16,645 tons and the latter 7 of 14,166 tons. British losses totaled 8 of 9243 tons and 8 steamers of 10,501 tons belonging to the dominions.

* * *

Thomas S. Deering, manager of the Pacific marine department of the Niagara, has resigned to enter the underwriting department of Appleton & Cox, New York City, and has been succeeded by George M. Parrish, son of Edwin Parrish, manager of the Pacific Coast department of the Niagara. The marine office of the Niagara has been removed from 314 California street, San Francisco, to 334 Pine street, where the other offices have been situated.

* * *

The Japanese steamship Chokyu Maru, owned by the Kamaishi Mining Company, is reported by Tokyo as having been wrecked while bound from Dairen to Kamaishi with a cargo of bean-cake. She was of 2538 tons. No details regarding amount of insurance on hull and cargo have been received.

* * *

Insurance of about $25,000, or approximately one-third her value, was carried on the hull of the steam schooner Fairhaven, which was abandoned in a sinking condition by her crew off Lower California March 19. She was owned by J. E. Davenport, San Francisco. Her cargo was coffee, sugar and lumber.

* * *

An interesting suit has been brought in Los Angeles by Julius Conrad and others against the California & Mexico Steamship Company for $70,500. Thirty-three carloads of bananas were thrown overboard by the crew of the motorship Mazatlan on the ground that the fruit had spoiled. The questions as to whether it had become rotten and whether it was loaded in good condition were raised.

# Shipbuilding

## Motorships Planned

Something unusual may develop in the construction of some large and fast Diesel-engined combination vessels if Congress enacts a satisfactory shipping law. An American steamship company, which has been weighing in turn the advantages of Diesel-electric and turbo-electric drive, has reverted now in its investigations to the direct Diesel method of propulsion. During the early part of its planning, Diesel manufacturers generally evinced a hesitation to bid on engines of the large size required, and the company was compelled to turn to a proposal to install several small engines, each of which would generate a portion of the electric current needed. This idea finally was rejected for more than one reason, the chief objection perhaps being the loss between Diesel and propeller. Thereupon turbo-electric propulsion gained an ascendancy; but all the while the company regarded that solution as less satisfactory than the direct-drive Diesel, if acceptable engines could be had. Now it has taken up the last-named plan again, with the result that some manufacturers are interested, although others still are reluctant to commit themselves.

Two Diesels of about 4500 brake horsepower each would be required for each of two twin-screw vessels. The ships would have sea-speeds of about 16 knots, in order that schedules of 15 knots might be maintained. The engines, it will be noted, would be of quite large size.

Construction of these ships is altogether contingent upon the kind of law that may be enacted by Congress.

## Diesel-Electric Tanker

The Standard Oil Company of California received bids in March for the construction of hull and machinery (separate tenders) for a 12,000-barrel tanker for use on San Francisco Bay. The plans were for a vessel 210 feet long between perpendiculars, 40 feet in molded beam, 16 feet 6 inches deep, having a mean draft of about 13 feet 6 inches and propelled by two six-cylinder stationary-type Diesel engines of 400 brake horsepower each, direct-connected to suitable generators of 250 volts delivering current to twin motors on one propeller shaft, the propelling motors to be directly controlled from the pilot house. No steam machinery was provided, all cargo pumps, winches, steering gear and so on being driven by electricity generated by the main engine. Whether the company would build depended upon the tenders. If construction is decided upon, the work will be done on the Pacific Coast.

## FAST LINERS

Signs multiply that naval competition between the great powers, lately manifest in the construction of dreadnoughts and battle-cruisers, is likely to be superseded by a race for the possession of fast merchantmen, which in one way and another would be exceedingly valuable in case of war. While President Harding was delivering his message on the merchant marine, the Japanese government, according to reports published in the vernacular newspapers of Tokyo, was being urged by the marine affairs committee of the Department of Communications to allot yen 250,000,000 ($125,000,000) at the rate of yen 50,000,000 a year for the construction of 100,000 gross tons of superior vessels each year, or an aggregate of 500,000 tons. The money needed, it was urged, might be obtained from savings effected in the naval budget. No statement has been made as to whether the sum suggested would be given in the form of subsidies or lent at a low rate of interest.

## Hawaiian Contract Signed

A contract for the construction of a 17-knot express passenger steamship for the Inter-Island Steam Navigation Company of Honolulu was signed by James A. Kennedy, president of the Inter-Island, and Robert Haig, vice-president of the Sun Shipbuilding Company, in the offices of Pillsbury & Curtis, San Francisco, March 14. The Sun yard was the lowest bidder with a tender of $1,027,000.

Mr. Haig said that his company expected to lay the keel of the vessel about the end of April, to launch her in September and to deliver in December. She should, therefore, be in operation between Honolulu and Hilo early in 1922. The Sun tender was for delivery in 285 days.

The engine will be a four-cylinder triple-expansion, the cylinders being 30, 52, 65 and 65 inches in diameter and the stroke 54 inches, the indicated horsepower about 5000, and the rate 80 revolutions a minute. The right-hand propeller will be approximately 17 feet 6 inches in diameter. Except for specifying that the engine should be a four-cylinder triple-expansion, and that it should drive the vessel at 17 knots' sea speed, the Inter-Island left design to the bidders.

## Other Work Planned

The placing of the Inter-Island contract, although it is the largest of several months, is not the only favorable development in shipbuilding. Some construction that was projected several months ago but did not materialize now appears to be reviving. The Merchants & Miners' Transportation Company announces that plans are under way for the construction of two combination vessels about 350 feet long, burning oil, for use in the Baltimore-Savannah service, the cost of each to be about $1,500,000. The Eastern Steamship Lines have completed plans and specifications for the construction of two 5000 gross ton passenger vessels for the Boston-New York trade and expect, according to an announcement made by the company, to have them in the water before the summer of 1923. These plans, following immediately upon the awarding of the Inter-Island contract, give point to the statement frequently heard nowadays that the building of the immediate future will be largely of passenger vessels for the United States coastwise trade.

Among the smaller jobs that appear on the horizon are two electric-drive ferries, plans for which have been drawn by the commissioner of plants and structure, New York City. They would be used in the Staten Island service. The Harlan Plant of the Bethlehem Shipbuilding Corporation has received a contract from Keith Spaulding for the construction of a steel schooner yacht, Diesel driven, 160 feet long, 30 feet broad, and 15 feet draft. The main engine will be of 180 horsepower; the deck machinery will have independent electric drive, and the yacht will be equipped with wireless. The New York Shipbuilding Corporation announces that it has received a contract for the construction of a second 340-foot carfloat for the Brooklyn Eastern District Terminal.

Two combination vessels of the Sound type to be constructed by Pusey & Jones for the Seaboard Bay Line will be 320 feet long between perpendiculars, 44 feet broad at the water line, will have a loaded draft of 14 feet 6 inches and a loaded speed of 18 knots; their deadweights will be 800 tons. The engines will be four-cylinder triple-expansion of 3000 indicated horsepower, fed by four Scotch boilers 13 feet 3 inches in diameter and 11 feet 6 inches long. The keel of each was laid February 23; launchings are scheduled for July 7 and August 7 and deliveries for October and November.

Pusey & Jones are building a beam engine and a boiler for a wood hull ferry under construction by the American Car & Foundry Company for the Baltimore & Ohio Railroad, and also are installing new boilers in the Wilson Line ferry Long Beach.

## Regarding Airplane-Carriers

If the Navy Department should decide to convert the battle-cruiser Saratoga into an airplane-carrier, as it is said to be contemplating doing, some of the ill-effect of the sudden suspension of warship construction will be removed, and the Navy, at the same time, will receive a vessel of which it is evidently in sore need. The first aircraft-carrier of the United States Navy, the Wright, is a remodeled transport, having a speed of only 17 knots or so, or far insufficient to cope with the British vessels of her class, which have speeds running up to 31 knots. That is the designed speed of the Furious. She was laid down as a heavy-gun light cruiser of the Courageous class, but was converted into an airplane-carrier. The Hermes, another carrier, was designed for 25 knots; the Eagle, laid down as a Chilean dreadnought, for 24 knots; and the Vindictive, formerly the light cruiser Cavendish, for 29 to 30 knots. Even the converted liner Argus is a 20-knot vessel.

On the other side of the Pacific Japan has under way the airplane-carrier Hosho, which was launched at the Asano yard on November 13. She is reported to be designed for 30 knots or more, or sufficient to permit her to accompany a battle-cruiser squadron; and now come later reports to the effect that the 44,000-ton battle-cruisers Akagi and Amagi, which certainly would have speeds in excess of 30 knots, also are to be converted.

When these facts are weighed, it appears that, with the exception of a total lack of battle-cruisers, the United States lags most in airplane-tenders, and that more than one battle-cruiser of the Saratoga type might be converted advantageously. The New York Shipbuilding Corporation is constructing the Saratoga. Completion of this vessel would tend to repay New York Ship for the impending loss of the Washington, which may be scrapped in favor of the West Virginia, building at Newport News.

The Japanese Navy Department issued an order February 6 stopping work on eight capital vessels. Each of the following yards was building two: Mitsubishi at Nagasaki, Kawasaki, Kure and Yokosuka navy yards. In order to avert shipyard unemployment, Vice Admiral Okada, head of naval construction, was reported to have said that the department would advance the construction of auxiliary craft from the coming fiscal year of 1924-1925 to the present. About 165,000 tons of vessels might be constructed now, inasmuch as 120,000 tons of the 225,000 tons possessed by Japan might be classed as obsolete, and an aggregate of 270,000 tons might be maintained. The program is reported to be: four cruisers, total of 36,000 tons; 15 light cruisers, total of 90,000 tons; 30 destroyers, total of 43,500 tons; 30 second-class destroyers, total of 25,500 tons. The grand total is 195,000 tons, so that there is a discrepancy between two sets of figures, or perhaps the program as outlined is for the more remote as well as the immediate future.

## U. S. S. B. Work Nears End

One substantial support of shipbuilding during the lean year of 1921 is about to disappear. The Shipping Board program is nearing an end. On the Pacific Coast the one vessel that remained to be delivered at the middle of March was the Chinese-built freighter Oriental, which cracked a cylinder on her voyage to San Francisco and could not be accepted by the board until the damage was repaired. When the Moore Shipbuilding Company has completed the work the Robert Dollar Company, acting as agent of the Kiangnan yard, the builder, will solemnly hand the vessel over to the Shipping Board, which quite as solemnly will accept her; and when a decent interval of a few minutes has elapsed, the board will hand the vessel back to the Robert Dollar Company in its capacity as purchaser. Thus the amenities will be preserved.

On the Atlantic one vessel, the Western World, formerly Nutmeg State, remains under construction. The Sparrows Point yard of the Bethlehem Shipbuilding Corporation expects to complete her about the end of April, when she will be delivered to the Munson Line for operation in the South American service with her sister, the Pan-America, formerly Palmetto State. The Western World is the last vessel of the greatest shipbuilding program of the world's history.

In passing it may be remarked that the Shipping Board's 535's are manifesting an ability to exceed their speed requirements greatly. On the heels of the record-breaking voyages of the vessels operated by the Pacific Mail and Pacific Steamship, comes a statement by F. C. Osborn, operating manager of the Munson Line, who said that the Pan-America during her twelve-hour trial demonstrated her ability to make 19½ knots without trouble, and the Peninsula State, built by New York Ship, made 18.8 knots on her trial, exceeding her requirement by more than a knot.

## Repair Costs Less

Repair costs in the San Francisco Bay district were reduced materially during February and March. Apparently because of the completion of the large marine railway of the Hanlon yard, Oakland, and the resultant increased competition, shipowners observed that repairs were costing less. There were reports that the change was in drydocking, as opposed to other elements, and that reductions in docking rates ranged between 10 and 20 per cent; but there were no changes in published schedules. In any event, costs were considerably lower.

## Yard Brevities

The Todd Drydocks, Seattle, have been awarded a contract for repairs to the R. M. S. P. refrigerator steamship Narenta, which grounded in Puget Sound in late February, on a bid of $115,383 and forty-two days. Her bottom was damaged for about 120 feet, beginning thirty-five feet from the stem. About fifty plates will be removed, of which some twenty can be faired. Other bids were: Yarrows, Victoria, B. C., $133,480, fifty days; Victoria Machinery Company, Victoria, $134,100, fifty days; Albina Engine & Machine Works, Portland, $136,000, forty-four days; Willamette Iron & Steel Works, Portland, $138,850, forty-two days; Moore Shipbuilding Company, San Francisco, $141,900, forty-six days; Bethlehem Shipbuilding Corporation, San Francisco, $143,150, forty-eight days.

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The Sparrows Point Plant, Bethlehem Shipbuilding Corporation, has received a contract for adding passenger accommodations and making extensive boiler repairs to the Chesapeake Steamship Line's steamship City of Baltimore.

* * *

The Todd Shipyards Corporation has purchased the plant of the Mobile Shipbuilding Company, Mobile, Alabama, which was sold by order of the United States District Court.

* * *

At a sale held February 21 by the Shipping Board, DeNeal Samuel of Washington, D. C., was high bidder for 93,754 tons of steel at $9.37 a ton.

* * *

New York shipyards and ship-repair plants reduced their basic rate for skilled labor from 72 to 64 cents an hour February 15.

The Diamond soot-blower business has been purchased by new interests in the form of the Diamond Power Specialty Corporation of Detroit, a new company that has taken over the business and plant of the Diamand Power Specialty Company, a copartnership, the members of which are retiring from the soot-blower business in the Western Hemisphere. Norman L. Snow, president and treasurer of the new company, resigns his position as vice-president and active head of the Terry Steam Turbine Company of Hartford, Connecticut, with which he has been connected for the past thirteen years. Mr. Snow is a graduate of Yale Scientific School and Massachusetts Institute of Technology, and has been in the power plant field for eighteen years.

* * *

Wm. Cramp & Sons Ship & Engine Building Company has acquired the plant and interests of the Pelton Water Wheel Company of San Francisco. The Pelton company, however, will continue under the old corporate name with H. B. Taylor, vice-president of the Cramp company, as president; Ely C. Hutchinson, formerly chief engineer of the Pelton company, as vice-president and general manager, and William H. Moody as second vice-president. The purchase of the Pelton company by Cramp combines two of the oldest American companies manufacturing hydraulic prime-movers.

* * *

A strike broke out in the plant of the Yokohama Dock Company February 24, more than 3000 employes walking out. The cause was the refusal of the company to pledge itself to pay discharge allowances in the event of a reduction of forces due to naval limitation.

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During three months ending the middle of March, the Shipping Board had sold more than $450,000 worth of material salvaged from the yard at Harriman, Pennsylvania, formerly used by the Merchant Shipbuilding Corporation. Much machinery remains to be sold, however.

## Atlantic Keel-layings

Combination steamer, sound type, Seaboard Bay Line, Pusey & Jones Company, February 23.

Sister to above, same owners and builders, February 23.

Dolphin, Diesel yacht Cox & Stevens, Newport News Shipbuilding & Drydock Company, February 27.

Ferryboat, Pennsylvania Railroad, Sun Shipbuilding Company, February 16.

Sister to above, same owner and builder, February 20.

## Atlantic Deliveries

Pan America, combination U. S. S. B., Bethlehem Shipbuilding Corporation, Sparrows Point Plant, February 25.

Bethore, ore and oil carrier Ore Steamship Company, Bethlehem Shipbuilding Corporation, Sparrows Point Plant, February 24.

Hell Gate, dredge V. R. Browning, Staten Island Shipbuilding Company, completed except for installation of machinery by owner.

## Pacific Keel-layings

Ferryboat James Rolph & Company, Bethlehem Shipbuilding Corporation, Union Plant, February 20.

## Atlantic, Gulf and Lakes

**All navy yard work is suspended or is progressing slowly.**

### AMERICAN BRIDGE COMPANY, PITTSBURGH, PENN.

Purchasing Agent: W. G. A. Millar.

Fifteen decked barges, 120 LBP; 30 beam; 7 deep; US Engineers, Memphis, Tenn.; two launched.

Two decked barges, undisclosed interests, 150x32x7-6; launch Feb/22.

Twelve sand barges, J. K. Davison & Bro., Pittsburgh, 135 x 26 x 10; launch Mar, Apr, May/22, est.

Two sand barges, H. H. Halliday Sand Co., Cairo, Ill.; 130x30x7-6; launch May/22, est.

One dredge hull, H. H. Halliday Sand Co, Cairo, Ill; 110 x 30 x 5-6; launch June/22, est.

Two oil barges, Gulf Refining Co; 158x36x11; launch May/22, est.

### BATH IRON WORKS, LTD., BATH, MAINE

Purchasing Agent: John L. P. Burke.

Light vessel 106, hull 87, second-class light vessel US Dept of Commerce, 109-6 LBP, 30 beam, 14-4 loaded draft, 9½ speed; comp eng, 400 IHP; 2 Scotch boilers, 10-6 x 11-4; keel Apr1/22, est; launch Oct/22, est; deliver Dec/22, est.

Light vessel 107, hull 88, sister to above; keel May1/22, est; launch Nov/22, est; deliver Jan/23, est.

Light vessel 108, hull 89, sister to above; keel June1/22, est; launch Jan/23, est; deliver Mar/23, est.

Light vessel 109, hull 90; sister to above; keel July1/22, est; launch Mar/23, est; deliver Apr/23, est.

Light vessel 110, hull 91, sister to above; keel Aug1/22, est; launch May/23, est; deliver June/23, est.

### BETHLEHEM SHIPBUILD'G CORPORATION, BALTIMORE DRYDOCK PLANT, BALTIMORE

Fort McHenry, hull 125, tanker builder's account; 340 LBP; 49 beam; 23-6 loaded draft; 10 loaded speed; 6000 DWT; rec eng, 2000 IHP; 2 Scotch boilers, 15-3; keel Nov24/20; launch Feb1/22; deliver Apr1/22, est.

### BETHLEHEM SHIPBUILDING CORP., FORE RIVER PLANT, QUINCY, MASS.

Lexington, hull 1300, battle-cruiser U S N.

Raleigh, hull 1382, scout cruiser U S N.

Detroit, hull 1383, scout cruiser U S N.

Massachusetts, hull 1400, battleship USN.

And the following nineteen submarines USN; T-2, hull 1270; hulls 1309 to 1320 inc, submarines S-18 to S-29 inc; hulls 1389 to 1394 inc; submarines S-42 to S-47 inc.

### BETHLEHEM SHIPBUILDING CORP., HARLAN PLANT, WILMINGTON, DEL.

R. D. Leonard, hull 3477, tanker Atlantic Refining Co; 226 LBP; 39 beam; 17 loaded draft; 8½ loaded speed; 2600 DWT; turb eng, 750 IHP; B & W boilers; keel Aug20/21; launch Dec31/21.

Hull 3478, yacht Keith Spaulding; 160 LBP; 30 beam; 15-3 deep; 360 DWT; Diesel engs, 360 IHP.

### BETHLEHEM SHIPBLDG. CORP., SPARROWS POINT PLANT, SPARROWS POINT, MD.

Pan America, hull 4196, combination USSB; 518 LBP; 72 beam; 30-7 loaded draft; 16 loaded speed; turb eng, 10,000 IHP; 8 Yarrows boilers; keel Feb19/19; launch June 4/21; **deliver Feb25/22.**

Western World, hull 4197, combination USSB; sister to above; keel July29/20; launch Sept17/21.

Bethore, hull 4211, ore and oil Ore SS Co; 550 LBP; 72 beam; 32-4 loaded draft; 11½ loaded speed; 20,000 DWT; rec eng, 4600 IHP; 3 Scotch boilers, 17-6x12; keel Feb 24/21; launch Dec3/21; **deliver Feb 11/22.**

Marore, hull 4212, ore and oil Ore SS Co; sister to above, except turb eng; keel May2/21.

Steelore, hull 4213, ore and oil Ore SS Co; sister to above; keel July 20/21.

### CONSOLIDATED SHIPBUILDING CORPORATION, MORRIS HEIGHTS, N. Y.

Purchasing Agent: Bruce Scrimgeour.

Lightship No. 105, US; hull 246; 146-3 LOA; 30 beam; 12-7 loaded draft; 825 DWT; comp eng, 400 IHP; 2 Scotch boilers, 10-6 diam; keel Mar4/21; launch Nov16/21; deliver Apr22/22,est.

### WILLIAM CRAMP & SONS SHIP & ENGINE BUILDING CO., PHILADELPHIA

Purchasing Agent: Ed. C. Geehr.

Richmond, hull 448, scout cruiser 29/21; 87 per cent comp Mar 1.

Concord, hull 449, scout cruiser USN; keel Mar29/20; launch Dec 15/21; 83 per cent comp Mar 1.

Trenton, hull 501, scout cruiser USN; keel Aug18/20; 58 per cent comp Mar 1.

Marblehead, hull 502, scout cruiser USN; keel Aug4/20; 47 per cent comp Mar 1.

Memphis, hull 503, scout cruiser USN; keel Oct14/20; 40 per cent comp Mar 1.

Installing Diesel engines in M.S. Californian.

### FEDERAL SHIPBUILDING CO., KEARNY, N. J.

Purchasing Agent: J. L. Hastings.

Hull 68, freighter undisclosed interests; 425 LBP; 56 beam; 27 loaded draft; 11½ loaded speed; 10,025 DWT; Parsons turbines, 3100 SHP; 3 Scotch boilers, 15-3x11-3¾; **keel Mar16/22**; launch Aug1/22, est; deliver Sept1/22, est.

### LAKE TORPEDO BOAT CO., BRIDGEPORT, CONN.

Purchasing Agent: C. D. Maxfield.

S-48, hull 48, submarine USN; launch Feb26/21.

S-49, hull 49, submarine USN; launch Apr23/21.

S-50, hull 50, submarine USN; launch June18/21.

S-51, hull 51, submarine USN; launch Aug20/21.

### MERCHANT SHIPBUILDING CORPORATION, CHESTER, PENN.

Vice-President: J. L. Ackerson.

Californian, hull 385, freighter American-Hawaiian SS Co; 445 LBP; 59-8 beam; 28-6 loaded draft; 11½ speed; 11,000 DWT; 2 6cyl, 4-cycle Diesel engs, 4500 metric; 1 vertical donkey, 400 sq ft HS; keel Feb5/21; launch Nov14/21; at Cramp yard for installation of Diesel engines.

Missourian, hull 386, freighter American-Hawaiian SS Co; sister to above; keel Feb10/21; launch Dec 14/21; at Cramp yard for installation of Diesel engines.

### NAVY YARD, BOSTON

Whitney, destroyer tender No. 4 USN; 460 LBP; 60-10⅛ molded beam; 21-0½ normal draft; 16 loaded speed; 10,600 normal disp; geared Parsons turbs, 7000 SHP; 2 WT exp boilers; keel Apr 23/21; launching indefinite.

### NAVY YARD, PHILADELPHIA

Dobbin, hull 7, destroyer tender USN; 460 LBP; 60-10 beam; 21 loaded draft; 16 loaded speed; 10,600 tons disp; Parsons geared turb single screw engs, 7000 SHP; 2 WT boilers; keel Dec23/19; launch May 5/21; deliver date not determined.

Constitution, hull 8, battle cruiser USN; 850 LBP; 105-4 beam; 30-11½ loaded draft; 33½ loaded speed; 43,500 disp; electric drive, 180,000SHP; 16 WT boilers; keel Sept25/20.

United States, hull 9, battle cruiser USN; 850 LBP; 105-4 beam; 30-11½ loaded draft; 33½ loaded speed; 43,500 disp; electric drive, 180,000 SHP; 16 WT boilers; keel Sept25/20.

### NEWPORT NEWS SHIPBUILDING & DRYDOCK COMPANY, NEWPORT NEWS

Purchasing Agent: James Plummer, 233 Broadway, New York City.

West Virginia, hull 211, battleship USN; 600 LBP; 97-3½ beam; 30-6 mean draft; 32,600 normal disp; 21 speed; GE turbo-elec drive, 28,900 SHP; 8 B&W WT boilers, oil, 41,768 sq ft plus 4168 superheat; keel Apr 12/20; launch Nov19/21.

Constellation, hull 215, battlecruiser USN; 850 LBP; 101-8¼ beam; 31 mean draft; 43,500 normal disp; 33¼ speed, est; Westinghouse turbo-elec drive, 180,000 SHP; 16 WT boilers, oil, 198,000 sq ft plus 18,000 superheat; keel Aug18/20.

Ranger, hull 215, battle-cruiser USN; sister to above; keel June23/21.

Iowa, hull 258, battleship USN; 660 LBP; 105 beam; 33 mean draft; 43,200 normal disp; 23 speed; GE turbo-elec drive, 60,000 SHP; 12 White-Forster WT boilers, oil, 82,800 sq ft plus 8940 superheat; keel May17/20.

Dolphin, hull 263, Diesel yacht Cox & Stevens; 180-6 LOA; 24 beam; 14 deep; **keel Feb27/22.**

### NEW YORK SHIPBUILDING CORPORATION, CAMDEN, N. J.

Purchasing Agent: L. G. Buckwalter.

Eurana, hull 264, bulk oil stock; 419-3 LBP; 56-3 beam; 25-9¼ loaded draft; 10¾ loaded speed; 9870 DWT; 3 cyl TE engs, 3000 SHP; 3 SE Scotch boilers, 15-10x11-4; keel Jan17/21; launch July16/21.

No name, hull 265, bulk oil stock; sister to above.

Saratoga, hull 199, battle cruiser USN; 874 LOA; 850 LBP; 105-5¼ extreme beam; 31 mean draft; 43,500 normal disp; 33¼ loaded speed; GE turbo-electric drive; 180,000 SHP; 16 WT boilers, 198,000 sq ft plus 18,000 superheat; keel Sept25/20.

Colorado, hull 200, battleship USN; 624 LOA; 600 LBP; 97-3½ beam waterline; 30-6 mean draft; 32,600 normal disp; 21 loaded speed; Westinghouse turbo-electric drive, 28,900 SHP; 8 B&W WT boilers, 41,678 sq ft plus 4169 superheat; keel Mar29/19; launch Mar22/21.

Washington, hull 201, battleship USN, sister to above; keel June30/19; launch Sept1/21.

Kamoi, hull 267, fuel ship Japanese Navy; 497-8 LOA; 67 beam; 28 designed draft; 15 loaded speed; 13,000 DWT; elec drive, 8000 SHP; 4 B&W boilers; keel Sept14/21.

Hull 268, carfloat Brooklyn Eastern District Terminal; 340 long.

Hull 269, carfloat Brooklyn Eastern District Terminal; 340 feet long.

### PORT ARTHUR SHIPBUILDING CO., PORT ARTHUR, ONT.

Purchasing Agent: W. E. Decker.

Hull 47, single-deck bulk freighter Mathews Steamship Co; 530 LBP; 58 beam; 12 loaded speed; 10,000 DWT; 3-cyl TE engs, 25½-41-67x42, 2100 IHP; 3 Scotch boilers, 13-6; keel not laid.

### THE PUSEY & JONES COMPANY, WILMINGTON, DELAWARE

Purchasing Agent: Jas. Bradford.

No name, hull 1020, combination steamer, sound type, Seaboard Bay Line; 320 LBP; 44 beam at waterline; 14-6 loaded draft; 18 loaded speed; 800 DWT; 4-cyl TE engs, 3000 IHP; 4 Scotch boilers, 13-3x11-6; **keel Feb23/22**; launch July 7/22, est; deliver Oct/22, est.

No name, hull 1021, combination steamer, sound type, Seaboard Bay Line; sister to above; **keel Feb23/22**; launch Aug7/22, est; deliver Nov/22,est.

### STATEN ISLAND SHIPBUILDING COMPANY, STATEN ISLAND, NEW YORK

Purchasing Agent: R. C. Miller.

Hell Gate, hull 728, dredge V. R. Browning; 140 LBP; 48 beam; 15 loaded draft; keel Aug28/20; launch Feb23/21; **completed,** except for installation of machinery furnished by V. R. Browning.

### SUN SHIPBUILDING COMPANY, CHESTER, PENN.

Purchasing Agent: H. W. Scott.

Agwiscot, hull 42, tanker A. G. W. I. S. Co; 480 LBP; 65-9 beam; 26-7 loaded draft; 12 loaded speed; 12,500 DWT; single screw QE engs, 4300 IHP; 4 SE Scotch boilers, 15-10 x11-11¼; keel Dec23/20.

Ferryboat Pennsylvania Railroad; 167 long; 55 beam; 14-8 deep; two screws; 3-cyl comp engs, 700 IHP; 2 B&W WT boilers; **keel Feb16/22.**

Ferryboat Pennsylvania Railroad, sister to above; **keel Feb20/22.**

Passenger vessel Inter - Island Steam Navigation Co., Honolulu; 345 long; 46 beam; 32 deep; 16½ speed; 4-cyl TE engs, 5000 IHP; 4 B&W WT boilers; to carry 434 passengers; keel not laid.

## Pacific Coast

### BETHLEHEM SHIPBUILDING CORPORATION, LTD.

### Potrero Works

Purchasing Agent: O. W. Streett.

Submarines USN: S-31, hull 136; S-32, hull 137; S-33, hull 138; S-34, hull 139; S-35, hull 140; S-36, hull 141; S-37, hull 142; S-38, hull 143; S-39, hull 144; S-40, hull 145; S-41, hull 146; all launched; outfitting proceeding slowly.

### Alameda Works

Chilore, hull 5309, combination ore

and coal carrier Ore Steamship Co; 571-6 LOA; 550-1 LBP; 72 molded beam; 44 molded depth; 32-4 loaded draft; 11½ loaded speed; 20,000 D WT; Curtis turbines with Falk reduction gears, 5000 SHP; 3 Scotch SE boilers, 17-6x12, each 4287 sq ft; oil burners.

Lebore, hull 5310, combination ore and coal carrier Ore Steamship Co; sister to above.

No name, hull 5314, ferryboat Jas Rolph & Co; 230 LOA; 63-6 beam over guards, 42 molded; 19-6 molded depth; TE eng, 1400 IHP; propeller drive; 3 WT boilers; keel Aug27/21.

No name, hull 5315, ferryboat Jas Rolph & Co; sister to above; keel Feb20/22.

No name, hull 5316, ferryboat Jas Rolph & Co; sister to above.

### CHOLBERG SHIPYARD, VANCOUVER, B. C.

Purchasing Agent: W. Meed.

(These vessels to be completed by Dominion government.)

Sir Henry Drayton, hull 5, 4-masted barkentine Victoria Shipowners, Ltd; 250 LOA; 45-6 beam; 21-10 loaded draft; 2400 DWT; sailing vessel; shaft logs fitted for auxiliary but no machinery installed; keel May 15/20.

No name, hull 6, 4-masted barkentine Victoria Shipowners, Ltd; sister to above; keel June4/20.

No name, hull 7, 4-masted barkentine Victoria Shipowners, Ltd; sister to above.

### HANLON DRYDOCK & SHIPBUILDING CO., OAKLAND

Purchasing Agent: R. Barker.

Dan F. Hanlon, hull 89, steam schr. D. J. Hanlon; 2500 DWT; 1400 IHP engines; 2 B&W boilers; work suspended.

### NAVY YARD, PUGET SOUND

Medusa, repair ship for government; 460 LBP; 70 beam; about 19 loaded draft; 17-5 loaded speed; turbine eng, 7000 IHP; 2 WT express type boilers; 10,000 tons disp; keel Jan2/20; launch and deliver dates not set.

Holland, submarine tender for government; 460 LBP; 61 beam; about 20 loaded draft; 16 K loaded speed; turbine eng, 7000 IHP; two WT express type boilers; 10,000 tons disp; keel Apr11/21.

### NAVY YARD, MARE ISLAND

Montana, battleship USN; 660 LBP; 105 beam; 33 loaded draft; 23 loaded speed; 42,200 disp; turbo-electric engs, 60,000 SHP; 12 Bu's express boilers, 74,040 sq ft; keel Sept 1/20.

Trevor, destroyer USN; 310 LBP; 30-11½ beam; 9-4 loaded draft; 35 loaded speed; 1215 disp; geared turbine eng, 26,000 SHP; 4 Normand boilers, 27,000 sq ft; keel Aug12/19; launch Sept15/20.

Perry, destroyer USN; sister to above; keel Sept15/20; launch Oct 29/21.

Decatur, destroyer USN; sister to above; keel Sept15/20; launch Oct 29/21.

### TODD DRYDOCK & CONSTRUCTION CORP., TACOMA

Purchasing Agent: C. L. Bankson.

Omaha, hull 100, scout cruiser USN; 555-6 LOA; 550 LBP; extreme beam 55-4; molded beam 54-9; depth molded 26; mean loaded draft 13-6; disp 7100 tons; Westinghouse Parsons turbines and reduction gear, 105,000 IHP; designated speed 34; 12 Yarrows WT boilers; keel Dec6/18; launch Dec14/20.

Milwaukee, hull 106, scout cruiser USN; sister to above; keel Dec13/18; launch Mar24/21.

Cincinnati, hull 107, scout cruiser USN; sister to above; keel May15/20; launch May23/21.

## Repair Work

### BETHLEHEM SHIPBUILDING CORPORATION, LTD., Union Plant

Hull repairs: Col. E. L. Drake. Miscellaneous repairs: S. C. T. Dodd, El Segundo, S. O. Barge 95, D. G. Scofield, Benowa, Sylvan Arrow, Oleum, Hattie Luckenbach, Oregon, Olinda, Maui, La Brea, Waihemo, St. Joseph, Waitemata, Henry T. Scott, Lurline, Enterprise, Col. E. L. Drake, Pleiades, Frederick Luckenbach, F. H. Hillman, La Placentia, Dilworth, Ventura, K. R. Kingsbury, R. J. Hanna, Buckeye State, Daisy Freeman, La Purisima, Kobenhavn, West Jena, Tahoe, Cethana, Georgina Rolph, F. S. Loop, Sonoma, Broad Arrow, Standard Arrow, San Pedro, E. P. Ripley, W. S. Rheem, Los Angeles, Roy Somers. New propeller: Mayfair, La Richmond, Independence, Hambro, Algonquin, Wilhelmina, Edna Christensen, Idaho, Tahchee, Habra, Harvard (2), Enterprise, San Joaquin, Brunswick (also tailshaft), Rose City (welding). Cylinder for cargo pump: Los Angeles. Pump parts: F. S. Loop. Condenser repairs: Richmond, Whittier. Wildcat: Liberator, Argyll (2 worms). Boiler repairs: Lewis Luckenbach. Engine repairs: Matsonia, Romulus, Newport.

### LOS ANGELES SHIPBUILDING & DRYDOCK CORPORATION, SAN PEDRO

Minor machinery repairs: Willie A. Higgins, Trinidad, Culburra, Pacific, Phyllis, Artigas, Osage. Minor repairs: Robin Goodfellow, Hanley, Craster Hall, S. F. Bridge Company dredger, Trinidad. Miscellaneous repairs: Chihuahua, Steel Mariner, Challamba. Extensive engine repairs: Yoshino. Extensive repairs and overhauling hull and machinery: Chiapas. Extensive machinery repairs: Kisanto. Propeller repairs and renewals: Yale. Engine, boiler, miscellaneous hull and machinery repairs, painting: Yorba Linda. Renewing tailshaft, log and stern bearing, installing new engine foundations: Lilly. Cleaning, painting, renewing two tailshafts: Lassen. Dismantling sailing gear and converting into oil barge, installing new donkey boiler and deck tanks, cleaning, painting: Falls of Clyde.

### MOORE SHIPBUILDING COMPANY, OAKLAND

Drydocking, cleaning, painting, miscellaneous repairs: Jim Butler, Taurus, Mojave, Fred Baxter (hull repairs), California, Janet Dollar, Hammac, Glendale, Shawnee, Crockett, Forest Home. Miscellaneous repairs: Empire State (voyage), Dewey, Pedro Costa, Canadian Inventor (engine), Gabriel, Christopher Columbus, Wm. Herrin, Red Rock (hull), La Merced, Oriental, Montebello, C & O Barge No. 1, Haida, Bear, Ventura, Bingtang (engine). Drydocking, cleaning, painting: Mukilteo, Port Angeles, Hawaiian, Port Judith, Tiverton. Steam pipe repairs: Edward T. Jeffery. Drydocking, propeller repairs: Fernwood. Drydocking and repairs: Western Pacific No. 2, Esther (misc. caulking).

### NAVY YARD, PUGET SOUND

Docking and miscellaneous repairs: New York, Kennedy, Woodbury, William Jones, S. P. Lee, Nicholas, Young, Pawtucket (incidental to operation as district craft). Miscellaneous repairs: Oklahoma, Laub, McLanahan, Stoddert, Reno, Farquhar, Thompson (incidental to operation as district craft), Eagle 57, Sotoyomo, Mahopac, Tatnuck, Iroquois. Docking and minor repairs: Coal barge 369, Water barge 23. Care and preservation: Seattle, Missoula, Charlotte, S. C. 310, Oregon (also docking).

### TODD DRY DOCKS, INC., SEATTLE

Docking, cleaning, painting: Forest King, Remus, Santa Cruz, Catherine D., Coaxet. Docking for survey: Forest Pride, two Drummond lighterage barges, Narenta. Miscellaneous repairs: Washington, Tacoma, Tyndareus. General overhauling: Unalga. Bottom repairs: Latouche. Engine repairs: Admiral Watson. Maintenance and betterments: Pine Tree State. Repairs to feed-water heater: Wenatchee. Main injection piping repairs: Keystone State. Engine and hull repairs: Snohomish.

### YARROWS, LTD., VICTORIA, B. C.

Docking, cleaning, painting, overhauling: Princess Ena. Docking, cleaning, painting, miscellaneous repairs: Canadian Scottish, Newington (also installing new tailshaft and propeller), Canadian Inventor, Tugs Olive M and Hope (underwater repairs), Princess Beatrice (new foremast). Contract to repair damage to bridge, deckhouses, etc., new mainmast and lifeboat: Bessie Dollar.

# Shipping

## A Retort to Manila

The American Steamship Owners' Association, through Winthrop L. Marvin, vice-president and general manager, has presented to Chairman Lasker of the Shipping Board a vigorous brief in behalf of the extension of the United States coastwise laws to the Philippine Islands. Mr. Marvin largely rests his case upon the experience of Hawaii, and in so doing assumes an almost impregnable position, for there scarcely is any convincing reply.

In the Organic Act of the Territory of Hawaii, passed in 1900, after the islands had remained under a provisional government for two years, the coastwise laws were formally extended to the new possessions, and the transportation of passengers and cargo became the exclusive right of American vessels. The result was, to quote the commissioner of navigation's annual report for the year, that "the change in transportation facilities thus prescribed has been brought about with much less inconvenience than might have been expected", and as regarded cargoes "no inconvenience has resulted so far as the bureau has been advised. In some instances passenger traffic has been somewhat embarrassed owing to the fact that under the law British and Japanese passenger steamships could not carry passengers except under heavy penalty between Hawaii and American ports on the mainland. American shipping interests, however, are rapidly beginning to remove any embarrassment on this ground by providing transportation facilities which will be superior to those hitherto possessed by the islands."

### Effects of the Change

In the same year the coastwise laws were extended to Porto Rico. Mark what happened, as Mr. Marvin puts it:

"There are no teachings so valuable as those of experience. It will be recalled that . . . predictions of disaster came . . . against the application of the coastwise laws to Hawaii and Porto Rico. Trade was to be injured, exorbitant, restrictive freight rates were to be imposed, only inadequate tonnage would be available, if the people of Hawaii and Porto Rico were to lose the precious privilege of having their goods and themselves transported to and from the United States in foreign ships. That was in the year 1900. But the official records of the Department of Commerce show that while the total commerce of Hawaii with the United States in 1900 was valued at $23,072,721, this commerce was valued at $66,451,992 in 1914, and at $266,435,638 in 1920. As to Porto Rico, its total trade with the United States, which was $5,763,648 in 1900, had advanced to $66,991,548 in 1914 and to $279,883,657 in 1920."

The 1920 figures in the case of both Hawaii and Porto Rico must be taken with a great grain of salt, however, because the exports of both were so largely sugar, which attained its peak in that year; nevertheless, the growth of business has been immense.

### In Hawaii Today

In Hawaii today the single argument advanced against the coastwise laws is heard when a sudden influx of visitors taxes passenger accommodations, and then the one request made at Washington, formally or informally, is for suspension of the laws so far as passengers only are concerned. There has been no argument whatever regarding the transportation of freight; no good reason exists why there should be, for under protection of the coastwise laws American-flag fleets, largely owned in the islands, have been built up, and the islands themselves have a great interest in the maintenance of those fleets. It is almost superfluous to add that the largest United States fleet at the outbreak of the war was that of the American-Hawaiian Steamship Company, which was built for the island trade. Mr. Marvin continues:

"Anticipating the application of the coastwise law, the Shipping Board is planning the firm establishment of a fortnightly mail, passenger and fast freight service from Puget Sound via Japan and China to the Philippines, and another fortnightly service from San Francisco via Hawaii, Japan and China to the Philippines. Moreover, it is announced that the Shipping Board is also preparing to put into service a separate direct mail, passenger and freight line from San Francisco via Honolulu to the Philippines. These schedules would provide a first-class mail, passenger and fast freight service oftener than once a week between the Philippines and the Pacific Coast of the United States, in addition to the regular cargo services to both the Pacific and Atlantic seaboards. The trans-Pacific mail, passenger and fast freight services would be performed by new government-built ships far superior in type to all but a few of the foreign steamers of existing services. It is reasonable to assume from the precedent of Hawaii and Porto Rico that under the coastwise laws the Philippines will enjoy much more frequent, regular and efficient communication with the American mainland than they have ever had before. For every foreign ship withdrawn, at least one American ship will immediately be available.

## TO HOUSTON

The Luckenbach Steamship Company is making an interesting experience in dispatching the steamship Jacob Luckenbach to Houston. This vessel, of about 9000 deadweight tons apparently is the largest loaded on the Pacific Coast for the Texas port, and may be the largest ever dispatched thither from any quarter. The Jacob Luckenbach, formerly the American-Hawaiian steamship Honolulan, is of 6847 tons gross, 4228 net, is 416 feet long, 53 broad and 28 deep. Inasmuch as the depth of water in the Houston canal is no more than 25 feet, and at this season, when the winter rains have just ceased, may be less, the steamer could not be loaded with a capacity cargo, but took only sufficient to give her a draft of about 22 feet. Even this, however, is quite deep, all elements considered, and her voyage through the Houston canal will be watched with a good deal of interest. If the experimental voyage should be successful the Luckenbach Line probably will open a regular service. Swayne & Hoyt, San Francisco, already have a Pacific-Houston line.

### Source of Opposition

"Opposition to the extension of the coastwise laws to the Philippine Islands comes either from foreign interests or from Americans or Filipinos who have been temporarily deceived by foreign representations. Just before the Merchant Marine Act of 1920 was enacted, a cable message from Manila came to Chairman Jones of the Senate committee on commerce, protesting in the name of the Manila Chamber of Commerce and the Merchants' Association against the application of the coastwise policy. But on the heels of this protest there came also an earnest message from 'five hundred 100 per cent Americans representing the preponderance of American business opinion in the Philippines', declaring that in the approval of the Jones law Congress would 'have taken into consideration the best interest and welfare of both the American and Philippine people, with a view to establishing permanently the merchant marine under the American flag in the Far East.' This American declaration added that the alleged protest from the Merchants' Association and 'the British - controlled Manila Chamber of Commerce' were thoroughly dishonest and represented only an effort 'to thwart the act of Congress and encourage Anglo - Japanese domination of the Pacific.'

"Hostile action of Anglo-Japanese interests in the Manila Merchants' Association and the Manila Chamber of Commerce against the American coastwise law promptly brought about the organization in Manila of the existing American Chamber of Commerce. . . .”

The fact is that extension of the coastwise laws to the Philippines offers the best immediate aid to the United States merchant marine on the Pacific, perhaps the best aid of all. Sudsidies may and may not be of avail; but the coastwise laws are a very present help in time of trouble. That these be troublous times few would deny.

## The Lesson of Panama

Although the aggregate amount of cargo carried through the Panama Canal during the calendar year 1921 was only slightly less than that handled in 1920, the decline being, to a broad view, almost negligible, there were some remarkable changes in the tonnages of individual trade-routes. The tables on the right, taken from the Panama Canal Record, tell the story graphically.

The changes may be summarized as follows:

A decline of 52 per cent in cargo moving from the Atlantic Coast of the United States to the West Coast of South America, the greatest loss being in coal shipments from Chesapeake Bay. Oil shipments from Mexico to the West Coast lost 47 per cent.

A corresponding shrinkage in tonnage bound from the West Coast to the Atlantic Coast of the United States, which fell off 57 per cent due to the collapse of Chilean nitrate shipments.

A decrease of 51 per cent in trade between the Far East and the Atlantic Coast; the opposite trade, however, fell off only 9 per cent.

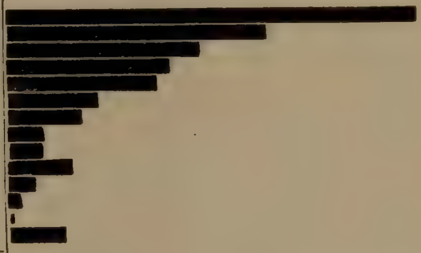
An increase of more than 100 per cent in Pacific Coast-European trade. Cargo from Europe to the Pacific Coast remained very small.

An increase of 73 per cent in westbound coastwise trade and of 57 per cent in eastbound.

The accompanying tables cannot be studied too carefully. Triangular or quadrilateral trade-routes are the cures for more than one shipping disease, and such routes are to be planned by fitting together the tonnages of different trades. When an approximate balance has been struck between eastbound and westbound business, or, in other words, when a vessel can be reasonably assured of cargo in both directions, a service offers a remunerative return.

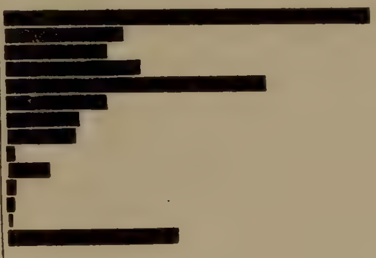
### Panama Canal Trade Routes of 1920 and 1921 Compared

CARGO FROM ATLANTIC TO PACIFIC—CALENDAR YEAR 1920.



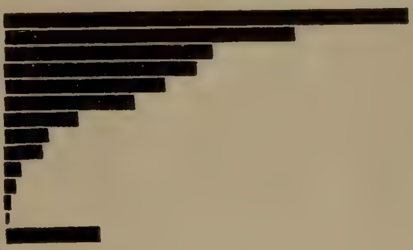
| | Tons. |
|---|---|
| United States to Far East | 1,405,417 |
| United States to South America | 893,393 |
| Mexico to South America | 659,777 |
| United States to Australasia | 532,297 |
| United States coastwise | 516,632 |
| Europe to Australasia | 310,876 |
| Europe to South America | 259,921 |
| Mexico to United States | 129,510 |
| Cristobal to South America | 114,445 |
| Europe to United States | 110,401 |
| United States to Canada | 92,371 |
| Cristobal to United States | 38,680 |
| Cristobal to Central America | 15,102 |
| Miscellaneous | 190,528 |
| Total | 5,269,350 |

CARGO FROM ATLANTIC TO PACIFIC—CALENDAR YEAR 1921.



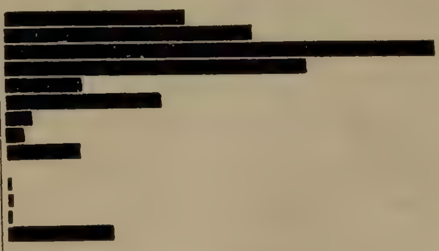
| | Tons. |
|---|---|
| United States to Far East | 1,271,575 |
| United States to South America | 417,818 |
| Mexico to South America | 348,626 |
| United States to Australasia | 446,101 |
| United States coastwise | 893,396 |
| Europe to Australasia | 346,600 |
| Europe to South America | 247,320 |
| Mexico to United States | 230,259 |
| Cristobal to South America | 39,497 |
| Europe to United States | 155,859 |
| United States to Canada | 34,148 |
| Cristobal to United States | 26,245 |
| Cristobal to Central America | 14,290 |
| Miscellaneous | 593,941 |
| Total | 5,065,675 |

CARGO FROM PACIFIC TO ATLANTIC—CALENDAR YEAR 1920.



| | Tons. |
|---|---|
| South America to United States | 1,447,849 |
| South America to Europe | 1,062,702 |
| United States to Europe | 749,447 |
| United States coastwise | 669,095 |
| Far East to United States | 549,990 |
| Australasia to Europe | 459,527 |
| South America to Cristobal | 251,451 |
| Australasia to United States | 156,015 |
| Canada to Europe | 129,909 |
| United States to Africa | 60,476 |
| United States to Cristobal | 46,542 |
| South America to West Indies | 21,435 |
| Central America to Cristobal | 16,054 |
| Miscellaneous | 346,277 |
| Total | 5,966,769 |

CARGO FROM PACIFIC TO ATLANTIC—CALENDAR YEAR 1921.



| | Tons. |
|---|---|
| South America to United States | 622,789 |
| South America to Europe | 857,107 |
| United States to Europe | 1,501,859 |
| United States coastwise | 1,050,722 |
| Far East to United States | 267,106 |
| Australasia to Europe | 540,633 |
| South America to Cristobal | 90,183 |
| Australasia to United States | 55,835 |
| Canada to Europe | 252,684 |
| United States to Africa | |
| United States to Cristobal | 15,432 |
| South America to West Indies | 17,656 |
| Central America to Cristobal | 14,815 |
| Miscellaneous | 354,509 |
| Total | 5,641,330 |

## The Chinese Strike

A 15 per cent increase in wages of Chinese employed on trans-Pacific vessels and a 20 per cent increase for those in coastwise service is the outcome of the great strike planned and executed at Hongkong. Although the men did not receive all that they demanded, they unquestionably have won a victory, despite a vigorous fight made by shipowners and what appears to have been unusual pressure exerted by the British government of Hongkong.

Talk of the immediate replacement of Chinese by white crews is being heard here and there, but it is subject to considerable discount. A willingness to work for low wages was by no means the only virtue of the Chinese; for years he has been practically invaluable on board trans-Pacific liners, especially in the stewards' departments, and his industry, willingness and cleanliness, in all of which he surpassed many whites, are sufficient to commend him even at far higher wages than he is receiving today.

Although a number of steamships flying the United States flag have Chinese crews, the effect of the increases in pay will be felt most by foreign lines, especially the British, and the primary result, so far as American shipping is concerned, will be toward an equalization of costs of operation.

## Potentialities Here

Scarcely had the Shipping Board delivered its ultimatum to the Chicago, Milwaukee & St. Paul and Great Northern railroads that they must abrogate their contracts with Japanese steamship lines than Canada began to twirl a coquettish fan toward Nippon. Premier Oliver of British Columbia has proposed to the Dominion government that the minister of railways take up the question of granting the Japanese preferential contracts with the Canadian National Railways, the result of which would be the placing of a considerable amount of through freight for the eastern portions of the United States and Canada or Western Europe, and also would enable the National Railways to compete with the Canadian Pacific, which owns both rail and water lines. What reply the Dominion government gave does not appear, but the proposal admittedly is interesting and full of potentialities.

If such a plan should be made effective, a vexed situation is likely to result. The Shipping Board scarcely is the body to quit supinely, and it conceivably might exercise, in conjunction with the Interstate Commerce Commission, exceedingly broad powers granted by different acts, such as Admiral Benson threatened to employ when Section 28 was more or less of a burning issue and foreign lines were threatening to divert their trans-Pacific vessels to Canadian or to United States Atlantic ports.

## Two Kinds of Logic

The ruling of Elmer Dover, assistant secretary of the treasury, to the effect that Shipping Board vessels need not pay penalties for violations of the customs laws when the craft are operated under MO4 agreement—that is, when the Shipping Board itself would be compelled to meet the fine—may have foundation in logic, inasmuch as "it would be futile for one government department to collect a penalty from another"; but the same ruling and the attitude that prompted it may be severely criticised on other and more logical grounds. The fact is that fines for violations of the customs laws, especially for the smuggling of opium and liquors, are proper charges against the operation of vessels; they have to be paid by private companies, and the Shipping Board should be placed upon the same footing, even though the payment of a fine would be in reality a mere bookkeeping operation. When the board is exempt from such fines the actual cost of operation as compared with that of privately-owned vessels cannot be ascertained. Although the amount involved might be small enough relatively it nevertheless remains a charge for which the Shipping Board should be held responsible, just as it should be subject to every item of expense that other corporations must shoulder. The board, through the Emergency Fleet Corporation, is likely to be with us for quite a time as an owner and indirect operator of tonnage; so long as it is, it should stand upon its own feet and neither ask nor receive favors from any other government department.

## Facts About the Board

Instead of the Shipping Board earning $100,000 during February, as newspaper reports published on March 3 would indicate, the board actually is losing money at the rate of $4,000,000 a month. Such, in brief, is a letter sent by J. W. Powell, retiring president of the Emergency Fleet Corporation, to Representative Wood. Mr. Powell explains that the board merely sent operators $100,000 less during February than it received from them, but that this fact, as is quite evident, had no relation to the operating returns.

### Unexpected Insurance Bills

"Regardless of bettering conditions which now exist in freights," Mr. Powell wrote, "the loss of the Shipping Board for some time to come will continue constant at the approximate $4,000,000 figure, because vast sums are being paid out at the present time for insurance due from the past, of which we knew nothing until within the last two weeks. Yesterday Mr. Lasker paid out $2,000,000 for P. & I. insurance due from prior periods to the present board's incumbency, of which no record existed and of which no knowledge came to the board until two weeks ago. Also, during the period between August and January, when freights were scarce and rates soft, very little work was done on the tied-up fleet, because Mr. Lasker desired to husband the cash resources of the Shipping Board so as to come within the limitations of appropriations. It is for that reason that the expenditures on the tied-up fleet, referred to in the article attached, were so low, operating as we were a lesser number of ships than we had been, and having taken out at first the best ships.

"From now on there will be comparatively large expense in repairs in further ships we take out of tie-up and in putting necessary reconditioning into some of the tied-up ships. All this was deferred during the period when voyage losses were so great; but, now that conditions are better and voyage losses will be lessened, repairs to the tied-up fleet can no longer be deferred. For this reason the loss will be constant at around $4,000,000 a month, as testified to by Mr. Lasker and myself. In other words, during those periods when voyage losses are great, we cannot do necessary repairs to the tied-up fleet. Whenever we get relief from voyage losses, the tied-up fleet is repaired. So that according to this policy of Mr. Lasker's, the Fleet Corporation will keep within appropriations, keep trade routes going, and keep its tied-up fleet in condition."

### What Is Needed

This is "plain language from truthful James", of the sort that the American merchant marine needs. When the rebound from our present depression comes we are likely to suffer from inane optimism; we shall need some one to tell us facts; to call a spade a spade, to inculcate a healthy pessimism. Optimism does not consist in minimizing difficulties; it consists in weighing them carefully and then going forward with a determination to remove them.

## The Middle West Helps

The Middle West Merchant Marine Committee, an organization representing commercial associations of several important Mississippi Valley cities, appears to be on the right course. It aims to help the American merchant marine by the simple expedients of acting as an intermediary between the Shipping Board and shippers and of urging importers and exporters to employ American tonnage. The committee recently submitted a plan of co-operation between shippers and the Shipping Board to the latter, which impressed Messrs. Lasker and Love quite favorably and will be put into effect as soon as possible. Representatives for important cities of the Middle West will be appointed to act as clearing-houses of complaints and claims and to disseminate information regarding services. The memorandum follows:

Last October our committee, representing the chambers of commerce of the twenty-five largest cities of the Middle West, conferred with your board regarding the establishment and maintenance of trade routes from Gulf and South Atlantic ports for the purpose of affording additional outlets to foreign markets for our shippers. We received from you at that time very satisfactory promises of co-operation, and at your suggestion a committee of three was appointed as a "point of contact" between the Shipping Board and the Middle West, with a view to securing the best form of co-operation between the shippers of the interior and the board.

### Promises Carried Out

This committee is glad to be able to report that the promises you made have been carried out to the full. In the Gulf, special services have been established, which it has been the privilege of Mr. Stewart to explain in person to many of the largest shippers of the Southwest, and which are already restoring confidence in our ships. In the South Atlantic, a system of indirect service has been adopted as a temporary measure during this period of shipping depression; and this service seems to be giving complete satisfaction for the present.

For our part, we have given the matter of further and greater co-operation with you the most careful thought. We believe that the key to the situation lies in direct personal touch with the shippers.

### American Bottoms Preferred

Almost all of our exporters and importers would prefer, other things being equal, to ship in American bottoms. Many of them have, however, had unsatisfactory experiences in the past and fail to realize that our services have been improved. This has created a widespread prejudice against the Shipping Board ships. Others are ignorant of the fact that our service exists. This prejudice and ignorance must be overcome.

This committee feels that the work being done by your St. Louis office is exactly along the right lines; and that this work should be expanded and co-ordinated with the work of our railroads and our chambers of commerce. To this end we recommend specifically:

1. An explanation of the Shipping Board organization in the interior along the following lines:

First: Branch offices embracing the principal cargo-producing centers should be established, retaining St. Louis as the principal office. We suggest the following, and urge that the first two at least be established at once: Chicago, Cincinnati, Minneapolis, Kansas City, Memphis, Detroit and Pittsburgh.

Second: Sectional experts. At least eight expert traffic solicitors should be employed at once, two to specialize on movements through North Atlantic ports, two on movements for South Atlantic ports, two on Gulf ports and two on Pacific ports. These men should be selected from the standpoint of their own intimate knowledge of service and other transportation conditions at the ports of these four sections.

### Railroad Aid Necessary

2. Co-operation with the railroads: An immediate effort should be made to enlist the active support of the resident representatives of the railroads throughout the interior. With this support assured it would be possible for the central office at St. Louis to consult from time to time with a general committee of railroad men on the general problems; and it would also be possible for the sectional experts to secure the co-ordination and co-operation of the railroads serving the ports of their respective sections.

3. Co-operation with chambers of commerce: An immediate effort should be made to enlist the active co-operation of all of the chambers of commerce in the Middle West. Your St. Louis office has already done much in this line. Much more could be done. Each one throughout the interior could be made to feel a direct sense of responsibility for the securing of cargo for American ships.

### Should Get Together

4. Conferences should be arranged in the principal industrial and agricultural centers to which would come men in authority from the ocean transportation companies and insurance companies, railroads and Shipping Board on the one hand and producers and manufacturers on the other. These meetings should be conducted in a spirit of utmost candor and frankness, always bearing in mind that each group present is dependent on the other if success is to be achieved for the American merchant marine and prosperity assured the country through the expansion of its foreign trade.

To sum up, this committee recommends and urges the expansion of your Middle West organization along the lines outlined above; an immediate attempt to secure the active co-operation of the railroads and the chambers of commerce of the interior; the proper co-ordination of your own enlarged organization, the traffic organizations of the railroads and the appropriate committees of the various chambers of commerce. This committee gladly offers to help you carry out this plan and believes that in so doing it can be of very material and direct assistance to your board in your effort to build up an American merchant marine.

## Canal's Principal Commodities

For the calendar year 1921 the following were the more important commodities passing through the Panama Canal from the Atlantic to the Pacific:

| | Tons |
|---|---|
| Crude oil | 900,410 |
| Manufactures of iron and steel | 697,210 |
| Coal | 539,351 |
| Refined oil | 461,085 |
| Cotton | 196,329 |
| Sulphur | 108,415 |

As compared with 1920 shipments of oils and steel increased and of coal decreased.

The principal commodities moving from Pacific to Atlantic were:

| | Tons |
|---|---|
| Nitrate | 991,767 |
| Wheat | 914,877 |
| Lumber | 448,087 |
| Barley | 435,481 |
| Sugar | 270,952 |
| Flour | 177,977 |
| Refined oil | 147,573 |
| Canned fruit | 143,188 |
| Copper | 135,073 |
| Refrigerated mutton | 128,515 |
| Canned fish | 107,188 |
| Wool | 107,075 |

Nitrate shipments declined about 1,000,000 tons from 1920; flour, 410,000 tons, but wheat increased 600,000 tons; lumber also increased by the large tonnage of 245,000 and sugar by 140,000.

## Between Watches

The Luckenbach Steamship Company has removed from the Merchants' Exchange building, San Francisco, to 201 California street.

* * *

A statement made in the March issue to the effect that Honolulu would be made a port of call of Canadian Pacific Steamships on their eastbound voyages was in error. Calls will be made westbound by the Empress of Canada and Empress of Australia during November, December and January, beginning with the sailing of the Empress of Australia from Vancouver November 15, 1922. On their eastbound voyages the vessels will steam directly from Yokohama to Vancouver. The new service will compete with that of the Canadian - Australasian Line, which operates vessels between Vancouver, Honolulu and Australasia.

* * *

The Inter-Island Steam Navigation Company of Honolulu has reduced wages of crews of its vessels 10 per cent, a 5 per cent reduction to be effective April 1 and a second on May 1.

The Los Angeles-Honolulu service of the Los Angeles Steamship Company probably will be begun early in June.

* * *

The Nippon Yusen Kaisha has removed its Seattle office to the ground floor of the Colman building, 801 First avenue.

* * *

A monthly service between Puget Sound and Japan has been announced by the Katsuda Kisen Kaisha, with R. T. Johns & Company, Seattle, as Pacific Coast agents.

* * *

The Nippon Yusen Kaisha, following upon the withdrawal of its large passenger vessels from the Orient-Puget Sound service and the substitution of smaller craft, has reduced trans-Pacific fares about 30 per cent, the Seattle-Yokohama rate now being $210 as against $300. It remains to be seen whether even such reductions will force the other companies to follow, for the N. Y. K. vessels are admittedly smaller and slower than most of their competitors.

* * *

Severe frosts in Southern California and the Southern San Joaquin Valley in January and consequent extensive damage to citrus fruits have put a halt to plans of the California Fruit Growers' Exchange for the formation of a refrigerator line to engage in intercoastal transportation. At the middle of February it appeared that 50 per cent of the estimated orange crop and 33-1/3 per cent of the lemon crop would be unmarketable. If these estimates are correct, shipments of citrus fruits from California during 1921-1922 will approximate 27,000 cars of oranges and 9500 cars of lemons, as against 45,236 cars of oranges and 11,659 cars of lemons shipped during 1920-1921.

She'll sail the wide seas no more; the iron four-master Falls of Clyde, built by Russell & Company at Port Glasgow in 1878, as she appears after her topmasts and yards were removed at the yard of the Los Angeles Shipbuilding & Drydock Corporation. She will be used as a barge by her owner, the General Petroleum Corporation.

* * *

Norton, Lilly & Company, Pacific Coast agents of the Isthmian Line, announce a direct service from San Francisco and Los Angeles to Havana, beginning April 15.

* * *

An agreement arrived at by railroads, steamship lines and the Seattle Port Commission and other wharf operators establishes a wharfage charge of 50 cents a ton on all trans-Pacific cargo, a handling charge of 40 cents a ton from tackle to shed and the same from shed to car, railroads and steamship lines to absorb all charges.

* * *

The Inter-Island Steam Navigation Company of Honolulu earned $123,535 in the utility department and $228,780 in the non-utility department during 1921. Dividends paid during the year amounted to $307,500. Earnings were at the rate of 4.11 per cent on steamships and 7.6 on other property.

* * *

The Los Angeles Steamship Company has announced a reduction in round-trip fares between Los Angeles and San Francisco from $35 to $30 and an increase of the return limit from sixty to ninety days, effective March 20. One way special cabin fares also have been cut.

* * *

Attorney General U. S. Webb of California has ruled that ocean-going vessels, river steamers and ferry boats exceeding 50 tons are exempt from taxation unless operated in connection with railroad transportation.

* * *

Effective March 1 the Olympic Tug & Barge Company and the Cary-Davis Tug & Barge Company, both of Seattle, were amalgamated under the name of the latter.

* * *

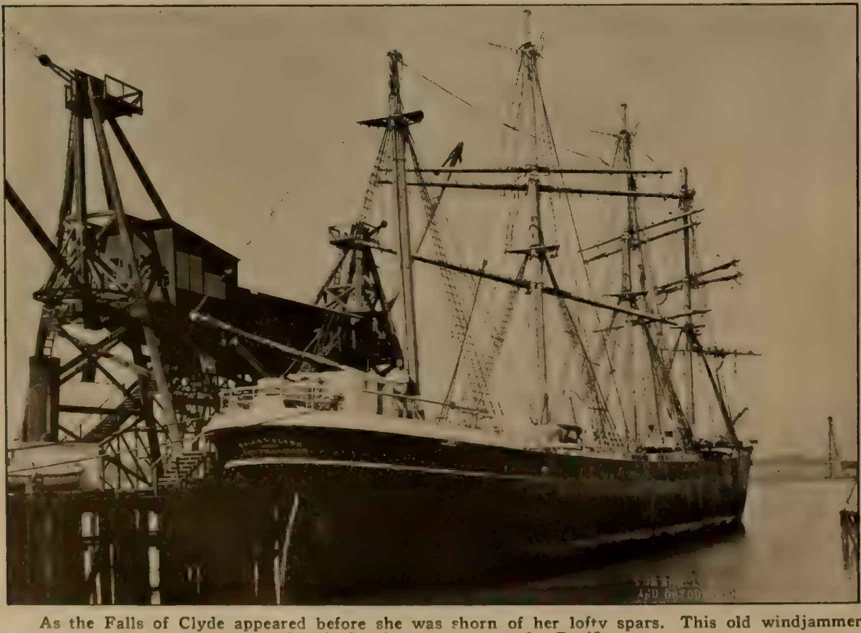
Los Angeles and the Union Pacific Railroad have been discussing a plan to dredge four deep-water slips into the newly-established pierhead line, each slip to have a minimum length of 600 feet, a width of 250 and a depth at low water of 30, which ultimately would be increased to 35. The space between slips would be 350 feet wide.

* * *

At the end of January there were 52 vessels (exceeding 100 gross tons) of an aggregate of 71,737 tons lying idle in the principal ports of Japan. These totals represented a decrease of 111 vessels of 117,429 tons from those of January 31, 1921, and of 83 vessels of 171,263 tons from those of April 30, 1921. Japanese authorities attribute the improvement in shipping to increased importations of foreign rice, larger shipments of bean-cake from Dairen to Europe, of lumber from the United States to Japan and of coal from Great Britain.

* * *

The Cunard Line announces that "during a recent spurt by the Cunard Line giant, the Aquitania, this great oil-burning steamer made a run of 27.40 knots an hour for four hours." The Aquitania evidently is a much faster vessel than had been believed.



As the Falls of Clyde appeared before she was shorn of her lofty spars. This old windjammer has had a long career on the Pacific

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The Panama Canal announces that merchant vessels from non-infected ports may be granted pratique by radio by making application between 8 a. m. and 4 p. m., the application to state: that the vessel has a clean bill of health and has no sickness on board; names of ports and places visited within the past ten days; that the vessel intends to transit the canal without taking stores of any kind or landing passengers or cargo. Radio should be addressed to the chief quarantine officer through port captain. Pratique will not be considered as granted until reply has been received from port captain: "chief quarantine officer grants pratique."

* * *

The Asiatic Petroleum Company (New York), the Asiatic Petroleum Storage Company (Panama) and the New Orleans Refining Company have removed their offices to the American Express Building, 65 Broadway, New York City.

* * *

The United American Lines (American-Hawaiian Steamship Company) announce the completion of arrangements with the Bull Insular Line for shipment of freight from Pacific Coast ports to San Juan and Ponce, Porto Rico, on through bills of lading with transshipment at New York.

* * *

Los Angeles business interests have approached the Union Pacific Railroad with a suggestion that it obtain Shipping Board combination vessels with which to maintain a service from Los Angeles to the Orient. The Shipping Board, it is said, regards the plan favorably.

* * *

The three-masted yacht Haida, owned by Julius Fleischman, arrived at San Diego March 11, having made a voyage from New York via Panama in forty days. This is held to be a record, as the entire voyage was made under sail and the time included three days spent at the canal.

* * *

A strike of licensed officers of Mexican steamships is reported on both the East and West coasts. The cause was the discharge of a master of a vessel of the Mexican Steamship Company.

* * *

The engineers of the Harbor Board of Los Angeles have completed a tentative plan of a large wharf and transit shed to be constructed south of the entrance to Slip 5.

* * *

The East Bay Steamship Agencies, Oakland, California, announce that the R. M. S. P. and Holland-America lines will extend their services to Oakland.

* * *

The Bellingham Contracting & Stevedoring Company has been organized at Bellingham, Washington, with a capital of $10,000.

## A LESSON

A year or so ago, when Canadian currency was at a discount of about 15 per cent as measured by the United States dollar, various exporters and steamship-operators were greatly exercised over the advantage thus given Canadians in competing with Americans both for foreign trade and the transportation of goods. It was essential, declared some, that the government or another agency take immediate action in order to restore the balance of things; Shipping Board vessels should accept cargo at Canadian rates, or in other words absorb the exchange differential; and what not.

But now, at this writing, Canadian currency is at a discount of only 2 per cent and has excellent prospects of going to normal. With what effect? That Seattle reports the diversion of considerable cargo from Vancouver to the American ports of Puget Sound. Everything, that is to say, is well. What brought about the present more satisfactory state of affairs? Nothing else than the slow adjustment of exchange; that was the only possible remedy. With this example before them, it is to be hoped that those who were clamoring for some specific cure last year will take to heart the lesson that patience and a comprehension of the working of economic forces are not inconsiderable virtues.

# Rates and Freights

## It Is War

A final break in the trans-Pacific trade, which may be characterized as a rate-war, occurred in March. One reduction after another created a situation that involved the entire Pacific Coast and left rates in general open. At the end of the third week in March the San Francisco lines had quoted $5 on all overland cargo that had not taken a lower rate up to that time, $5 on flour and wheat and $12 on lumber. Rates on cargo originating locally, or in territory where Puget Sound competition could not be felt, were maintained, however; and this fact, and the general cohesion of both the California and Puget Sound operators to their own groups removed the situation greatly from indiscriminate fighting.

Shippers might as well profit by the low rates obtaining, for some settlement is exceedingly likely to be reached within a short time. Rate-wars are like rain, descending upon both the just and the unjust; they are like thunder, in that they tend to clear the air; and they are followed by fair weather. In short, the fighting lines will have had quite enough of bloodshed within a short time and will be ready to meet around the council table and smoke the pipe of peace.

### Two Years of Woe

For two years or so trans-Pacific conditions have gone from bad to worse. The final break that came in March had been averted time and time again only by repeated concessions and the exercise of much patience and diplomacy; but each situation, regardless of the patching done, served to weaken the rate-structure just a bit more; the North and South separated into two groups with the Columbia River occupying a position midway between the larger associations; finally, Puget Sound dissolved its formal organization, California lost members, and in this manner the foundations were weakened.

The wind that was to blow the house down arose in the North. For some time, as is well known, lumber has, in a manner of speaking, been a bone of contention. It has been the backbone of cargo movements, and more than once little rate-wars have arisen. Scarcely were they settled by unstable armistices when Japanese tramp tonnage, largely in the hands of private American companies, flocked to Puget Sound and the Columbia River. These Japanese tramps accepted $12 a thousand feet. What was the most logical consequence? That the Blue Funnel, which has never fled from a fight, cut the rate to meet the Japanese. Thereupon the O. S. K., N. Y. K. and Admiral Line, none of which had been involved in the skirmish up to that time, decided to meet competition.

### The Flashing of Steel

Hardly had they made this decision when the Canadian Pacific, taking umbrage at the action, announced that all rates were open. That was, of course, the end. California lines immediately accepted the challenge; Puget Sound, irritated by that development, became truculent, for the North apparently had been trying to carry water on both shoulders, had been endeavoring to maintain an approximation of their old rates even while declaring them open; and the result was as has been stated: war. Yet it should be noted that the California Pacific Westbound Conference con-

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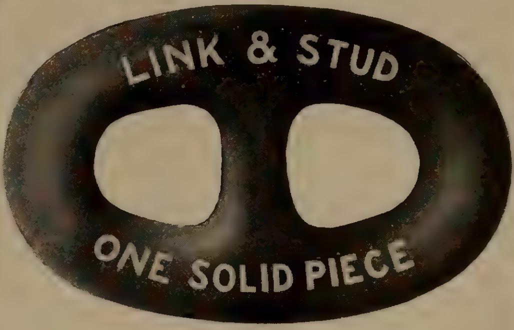

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tinued to function; the Shipping Board was able not only to hold its own operators in line, as of course it could do, but was able also to exercise a stabilizing influence; and there was good reason for believing that all lines would quickly tire of their expensive little pastime. Even those companies that had been cavorting merrily without the conference fence might have more than enough of $12 lumber.

Some intimation of impending trouble came from the Orient in late February. Japanese importers of lumber were loath to sign new contracts, inasmuch as the home demand had declined and prices were low. The one development that could lead to continued exports, it was said, was a reduction in freight rates. The reduction has come; now we shall see whether it can maintain exports from the United States and Canada. Why should exports continue in the enormous volume of last year? Japan has had no particularly disastrous fires of late; and it is the terrific conflagrations from which Tokyo, Kobe, Osaka and Yokohama suffer that are largely responsible for such heavy buying as that of 1921. It is interesting to observe in this connection, however, the West Coast Lumbermen's Association new bookings for export: week ending February 11, 10,400,080 feet; week ending February 25, 15,513,336 feet; week ending March 11, 10,329,175 feet. That sudden peak at the end of February is decidedly interesting, for it came at a time when Japan was getting lukewarm. Perhaps the influx of the Japanese tramps accepting cargoes at low rates created it.

### Peace Meeting Postponed

The trans-Pacific rate-war came at a time when Vice-President Love of the Emergency Fleet Corporation was attempting to restore harmony by persuading the Blue Funnel and other non-conference lines to become members of a general Pacific organization, in which the California Pacific Westbound Conference and the informal body of Puget Sound might be merged. Mr. Love's plan necessarily is postponed for the time being, but in the end the break may be of actual benefit in restoring harmony. After having fought a bloodless duel, two Frenchmen are popularly supposed to embrace; well, we may see the Blue Funnel and Mitsui walking arm in arm through the lanes of Pacific commerce. Steamship companies really do not hate one another so much as the uninitiate might believe.

## Orient Disconcerted

The Orient appears to be slightly disconcerted by the action of the Admiral Line in withdrawing from all eastbound conferences except those of the Shipping Board. This step was taken because Puget Sound was being served by such outside lines as the Blue Funnel, Mitsui, Yamashita and Kokusai, which had forced the Trans-Pacific Freight Tariff Bureau to make reductions of from 25 to 40 per cent February 15. As a member of such an organization as the Freight Tariff Bureau the Admiral Line was placed in an awkward position, and the Shipping Board, recognizing this fact, sanctioned the withdrawal. The moral is the old one: in times of low rates and little cargo, non-rebating conferences cannot hold their ranks firm. Even the Japan-India conference, which does give rebates, is reported as weakening under the assault of the O. S. K., and that powerful line, in turn, is tiring of the losses it is incurring.

## Flour Reduced

In intercoastal trade the chief development of the month was a reduction on flour from the Pacific Coast to North Atlantic ports of from 55 cents to 35 cents a hundred pounds. The old rate continues to hold for the South Atlantic and Gulf. Flour shippers said to the conference that a 35-cent rate was necessary in order that cargo might be moved, and the conference granted the reduction, but for only two months, from March 17 to May 16. The minimum shipment accepted at the 35-cent rate will be 750 tons by one shipper in one vessel.

## Trade Council on Hague Rules

American shipowners and operators are urged by the National Foreign Trade Council to issue, as soon as possible, bills of lading drawn in conformity with the Hague Rules, 1921. These rules make material changes in the distribution of rights and liabilities between cargo owners and ship owners. The carrier's liability for loss or damage is increased from $100 to £100 (now about $435), and the carrier is not authorized to prorate losses. The time within which claims for loss or damage can be filed is materially lengthened. In case of loss, the burden of proof is placed upon the carrier to show that the loss did not occur while the goods were in his charge.

### Statement by Farrell

The following statement represents the views of the executive committee of the council, of which James A. Farrell, president of the United States Steel Corporation, is chairman:

"The committee believes that these rules embody as favorable a readjustment of the distribution of liability between shipper and carrier as can at present be secured. While fully cognizant that these rules do not satisfy many of the demands of the shippers, the committee is of the belief that their adoption will constitute a substantial step in the right direction, and will, in fact, confer very real benefit on the foreign trade of the United States.

"The committee wishes to point out that ocean transportation is an international business, and that American companies cannot continue to compete in the carrying trade of the world if saddled with burdens not imposed on their foreign competitors. If it is desired to secure additional modifications in the relationship between shipper and carrier, the committee feels that action to this end should be taken simultaneously by the leading maritime powers.

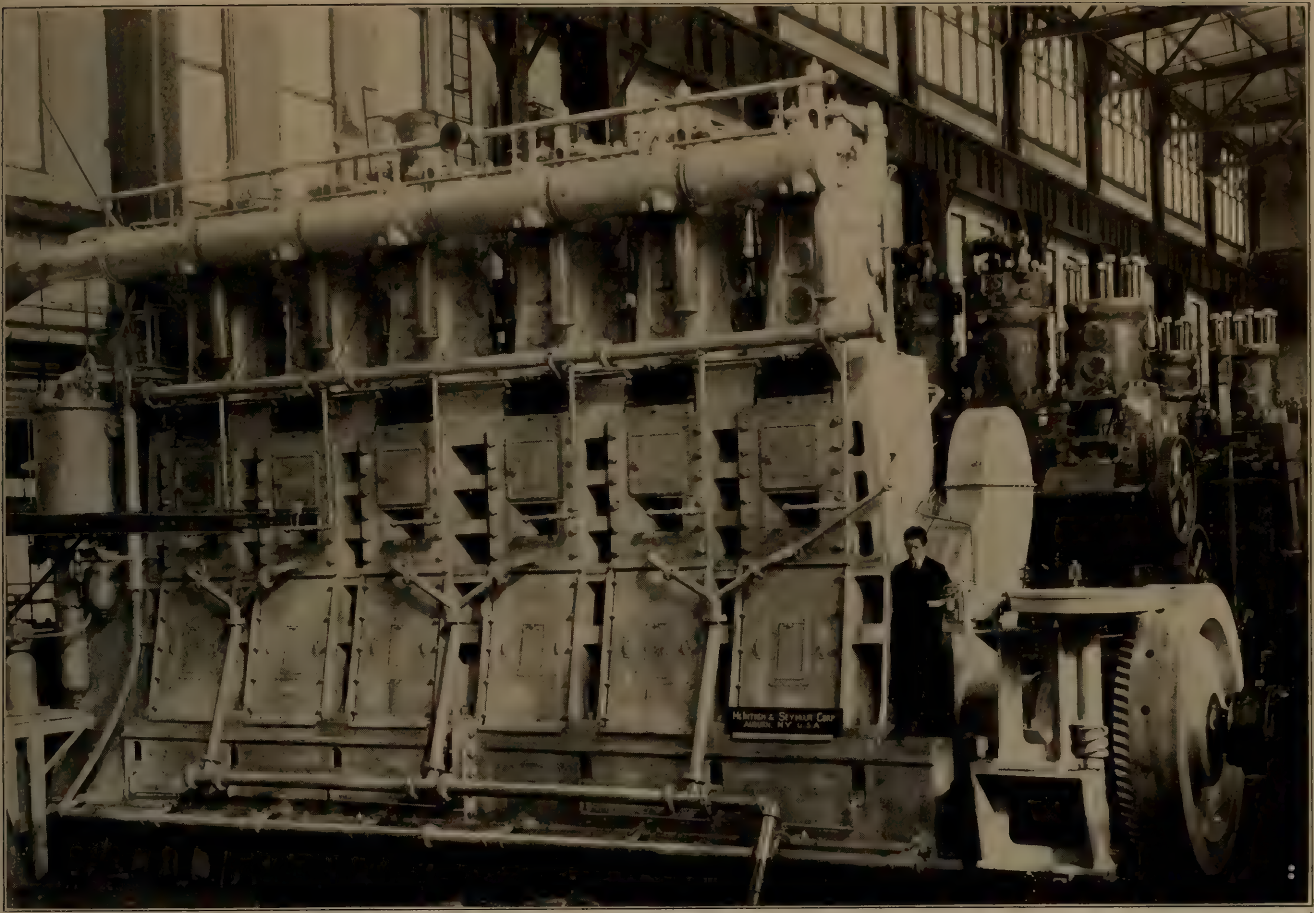
"The committee is of the opinion that the principle of uniformity of commercial documents, to which the National Foreign Trade Council has frequently declared its allegiance, will be materially aided by the adoption of the Hague Rules, 1921.

### Place Americans on Parity

"The committee urges upon American ocean carriers the desirability of putting these rules into effect at the same time that they are first applied elsewhere, thus enabling our shippers to offer their foreign customers shipping documents providing as great a degree of protection as will be afforded by our competitors' bills of lading.

"Inasmuch as the Hague Rules, 1921, embody some provisions not in complete conformity with the Harter Act, 1893, which is the controlling legislation in the United States, the committee is of the opinion that Congress should pass enabling legislation which, while retaining the Harter Act in force, will permit American ocean carriers to make contracts in accordance with the provisions of the Hague Rules, 1921. The committee feels that such enabling legislation will meet the situation, and can be secured more promptly than a general revision of the Harter Act to bring it into conformity with the Hague Rules."

The National Foreign Trade Council is planning to call a meeting of shipowners, traffic managers, bankers and insurance men during the Philadelphia Foreign Trade Convention, May 10, 11, 12, in order to consider these rules and to take steps necessary to secure their adoption.



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## Hague Rules Praised

American business organizations connected with the International Chamber of Commerce have been asked to take a position with regard to the Hague Rules, 1921, which among other things provide for uniform ocean bill of lading, says a statement issued by the Chamber of Commerce of the United States. The international chamber at its meeting in London last year went on record in favor of uniformity and simplicity in ocean bills of lading. Since then the executive committee of that body approved the Hague Rules, and directed that immediate steps be taken by the executive officers looking to the acceptance of the rules by organizations of more than twenty countries holding membership in the international chamber. Accordingly, a letter has been sent out by the American section of the international chamber to organization members in this country asking them to approve the rules.

### Uniform World-wide Law

One of the worth-while benefits that will result from the adoption of the rules will be a uniform law applicable to carriers the world over, it is pointed out in the letter. "This will make possible simplified and uniform documents in the regular trades; will facilitate bankers in loaning against bills of lading; will make definite the risks accepted by underwriters when insuring goods in transit; and will materially lessen litigation."

"As set forth in the letter the rules are intended to accomplish three things for which shippers have been contending unsuccessfully for years, as follows:

"They allow twelve months in which to file claims and bring suits, instead of the very short periods often contained in ocean bills now in use.

They shift the burden of proof to the carrier in cases of pilferage, by omitting any specific exception of pilferage; that is, if goods are stolen while in the carrier's possession he must prove that they were not stolen by his employes or through their fault."

"These provisions represent a compromise of points which have been in controversy for years.

### Adopted by Steamship Lines

It is strongly indicative of the growing sentiment in behalf of the rules that recently twenty of the most prominent British steamship lines operating between Great Britain, the United States and Canada have developed the provisions of the rules in their bills of lading for westbound traffic. They are precluded from doing this on eastbound traffic by reason of certain provisions of the Harter Act governing bills of lading issued in this country. It is expected that Congress will consider such minor modifications in existing laws as will permit of the early adoption of the same bills of lading for eastward traffic for the United States.

## The Export Bill of Lading

The reason for the continued suspension of the new export bill of lading is given as follows by the Department of Commerce:

The United States Shipping Board, having recommended certain amendments which it considered essential to be made in Part II of the uniform through export bill of lading prescribed by the Interstate Commerce Commission, the latter body reopened the bill of lading case, and a hearing was held on March 4 to consider the amendments. The Shipping Board gave as a reason for its action its intention to promulgate a port bill of lading in the near future and therefore believed that there should be no variance between the two bills in the essential particulars. The hearing was limited to the reasonableness and propriety of the suggested provisions for inclusion in Part II of the uniform through export bill of lading.

The commission, believing that considerable work had been done and expense incurred in the matter of printing supplies of the bills of lading prescribed by it and wishing to avoid delay and confusion, has provided that, pending decision in the matter, the order entered on October 21, 1921, as modified by the order of January 30, 1922, shall remain in full force and effect. An early decision is promised; and in the event that amendments should be found appropriate, the effective date of any order of the commission thereon will be such as to allow reasonable time for making changes, due consideration being given to the supplies of unused printed forms on hand.

## When Sorrows Come

In its struggle for foreign trade Los Angeles is experiencing some singular difficulties. In the first place, a recent ruling of the county counsel that cotton awaiting compression is not technically in transit and therefore is subject to taxation actually has become effective, and a tax of $2 a bale was levied March 6. The result was the diversion of shipments, one lot of 2000 bales destined to Europe having been forwarded to Galveston, as the tax of $4000 would have exceeded the added freight.

If this queer ruling were not sufficient to cause importers and exporters to have sleepless nights, an ancient statute has been invoked to destroy Los Angeles' small-craft business with Mexico. It appears that Congress in 1799 passed a law providing that all vessels of less than 30 tons net should not land cargo except at the customs port nearest a border line. This act probably was designed to prevent smuggling by small craft. Its effect today is to build up small-boat business between San Diego and Mexico.

Los Angeles might cure the latter ill by appealing to Congress. A cure for the former would be a new county counsel.

## Beyfuss Freight Report

San Francisco, March 23, 1922.

Contrary to our report last month there has been a most decided falling off in full cargo chartering and in fact there is very little chartering to report in any direction.

Grain to Europe: In this trade a steamer was fixed early in March at about 42/9, but since then the market has been very quiet, no full cargoes being reported and very little parcel booking being done.

Lumber to the Orient is absolutely without any definite business, and as we write rates are weak at $12, and there is a report that one or two steamers have been chartered as low as $10, but even at this rate there is no activity in this direction.

The trouble in South Africa was undoubtedly the reason why the several inquiries we had during the month brought practically no response and rates in this direction are nominally $22.50.

Lumber to Australia and the West Coast of South America has shown no change from what we said in our report of last month.

Two of our locally-owned sailing vessels have been fixed for prompt loading, coals, Newcastle to the West Coast of South America, at approximately 36/-.

C. BEYFUSS CO., Brokers

## Page Freight Report

San Francisco, March 23, 1922.

Since our last report, dated February 24, freights on lumber have weakened in all directions, one firm here having arranged space with a steamship company for some 2000M feet at $15 per thousand feet for discharge in parcels at various ports in Peru and Chile. No full cargo fixtures are reported to the West Coast. Australia shows no improvement, there being no business in

SERVICE

OVER 1200 Sperry Gyro-Compasses have served the World's Navies during the last decade.

In the last three years, 25 of the world's largest ship operating lines have installed the Sperry Gyro on their ships.

This record of service exemplifies the value of the Sperry non-magnetic, true north compass.

*Catalogue upon application.*

**THE SPERRY GYRO SCOPE CO.**
MANHATTAN BRIDGE PLAZA
**BROOKLYN, N.Y.**

STOP BAFFLE PLATE TROUBLE

**If the baffle plates and other brick work in your furnaces are being damaged by an uneven flow of oil to the burners, you need**

The Kinney Rotating Plunger Pump

**to supply a smooth, continuous, and uniform flow of oil. Positively eliminates ALL trouble.**

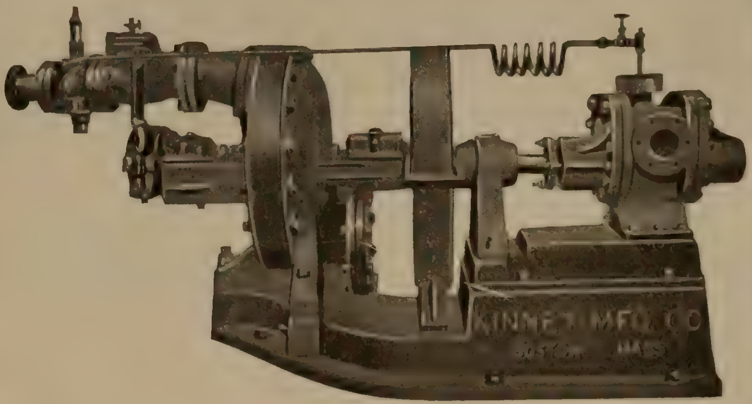
The illustration shows type of KINNEY ROTATING PLUNGER PUMP installed on the U.S.S. New Mexico. This same type will be installed on the Battleships Tennessee, California, West Virginia, Washington, Colorado and Maryland; also Battle Cruisers Nos. 45 and 49 and over half a hundred Submarines.

Cargo pumps of 3,000 gallons capacity each per minute are building for Tank Ship No. 16.

If it's Good Enough for Uncle Sam, you should be interested.

SEND FOR CATALOG

**THE KINNEY MFG. CO.**
BOSTON MASS.



chartering, and space is obtainable at $14, and even less than this figure is reported as having been made. The healthy demand for tonnage that obtained for Japanese squares a month ago at from $14 to $14.25 per thousand feet has fallen off entirely, and the only full cargo fixtures reported are the Oridono Maru by Robert Dollar Company, terms private, and a Japanese steamer by Hind, Rolph & Company at $14.20, and within the last few days the Shinkoku Maru by Willcox, Hayes & Company at a reported rate of $10 per thousand feet for two trips. The schooner Levi W. Ostrander also is engaged to take lumber to Japan for owners' account.

The steamer Everett is fixed with a full cargo of ties for Guaymas for owners' account.

During the earlier days of this month, business in grain freights to the United Kingdom and usual Continental range ports continued brisk, and rates by the regular liners advanced to 42/6, which rate still obtains today. Four or five full cargo fixtures by Japanese steamers from the North were reported, and while the rates have not been divulged it is understood that they were at about 42/6. Included in these was one at a reported rate of 43/8 taken by the Portland Flouring Mills, and the Northern Grain & Warehouse Company is credited with two, as also Kerr, Gifford & Company.

The schooners North Bend and Bianca were both chartered for coal from Newcastle to Callao, terms private. James Rolph & Company have engaged the steamer West Henshaw for coal from Newcastle to San Francisco, terms private. The Norwegian steamer Adour will bring a full cargo of ore from Chile to Tacoma at a reported rate of $5 a ton.

The steam schooner Thomas L. Wand has been bought by John Ogden, terms private.

PAGE BROTHERS, Brokers.

# Personals

**Hal M. Remington,** assistant manager of the traffic bureau, San Francisco Chamber of Commerce, has resigned to become manager and traffic director of the California Growers & Shippers' Protective League, Holbrook building, San Francisco.

**W. E. Griffith,** director of the Hampton Roads district, Shipping Board, has been appointed manager of the operating department, succeeding R. J. Ringwood. Mr. Griffith has been succeeded by A. G. Malone.

**Joseph Scott,** formerly of the Shipping Board's European staff and more recently assistant general manager of the States Marine & Commercial Company, has been made manager of the steamship department of the Transmarine Corporation, a Submarine Boat subsidiary.

**Captain Frank E. Ferris,** who was succeeded as European commissioner of the Shipping Board by Joseph E. Sheedy, has been representing the United States Lines in obtaining concessions for the transportation of emigrants from Germany, Austria, Poland, Czecho-Slovakia and Jugo-Slavia.

**The Reverend Frederick Kendall Howard** has been made chaplain of the Seamen's Church Institute, San Francisco.

**Captain H. W. Lewis** has succeeded Captain E. W. Christenson, resigned, as bar pilot, San Francisco.

**Captain Francis H. Robinson,** president of the National Interocean Corporation, is now general freight agent of the Williams Line, with headquarters at 11 Moore street, New York.

**Captain George Harding** is port superintendent of Hind, Rolph & Company, San Francisco, his appointment having been announced recently.

**S. F. Booth,** Pacific Coast representative of the Kerr Line and well known in railroad traffic offices, has joined the freight traffic department of the Pacific Mail.

**Captain H. Snoddy,** master of the Griffiths steamship Anyox when she saved survivors of the Alaska wreck, has been appointed a member of the Vancouver Pilotage Association.

**Captain Frank Mechan,** first mate of the steamship Bessie Dollar, which he took into port at Vancouver after she was badly battered at sea recently, has been appointed master of that steamer.

**R. J. Burger, E. A. McMahon and L. A. Scott,** formerly of the Luckenbach Line, San Francisco, have joined the traffic department of Crowell & Thurlow, for whom Sudden & Christenson, San Francisco, are general Pacific Coast agents.

**Charles E. Moore** has been made vice-president and secretary of the Herberts Machinery & Supply Company, Los Angeles and San Francisco.

**L. F. Root,** executive assistant, Puget Sound district, Shipping Board, has been appointed district traffic manager, in charge of all traffic of Washington and British Columbia.

**Captain Charles Hansen,** formerly master of the Shipping Board steamship Hanley, operated by the Pacific Steamship Company, is now assistant port captain of the company in Seattle under Captain R. C. Brennan. **Captain M. F. Tarpey** has been made port captain at San Francisco.

**J. C. Dunn,** general secretary of the Yokohama United Club since 1912, has resigned to join the Toyo Kisen Kaisha as purser.

**H. C. Ewing** has been appointed Oakland agent of the Luckenbach Line, succeeding Roy Thompson. Mr. Ewing served with the Lehigh Valley and Pere Marquette railroads and with the Pacific Mail Steamship Company. **D. S. Crone,** formerly general agent of the Western Pacific at San Jose, has been appointed district freight agent, Luckenbach Line, San Francisco.

**C. O. Burgin,** formerly traffic manager, Luckenbach Line, San Francisco, who joined the Atlantic-Gulf & Pacific recently, has been made general freight agent, Pacific Coast. **R. E. Devinney** has been appointed assistant general freight agent in charge of eastbound traffic and **H. R. Dorr** assistant general freight agent in charge of westbound traffic. All have their headquarters in San Francisco.

**Albert H. Terry,** for several years with Christenson, Hanify & Weatherwax, San Francisco, as traffic manager, has joined Sudden & Christenson, who are agents of Crowell & Thurlow.

**James W. Boring** has been appointed manager of the advertising department of the Emergency Fleet Corporation. The change was made necessary by the continued ill health of M. B. Claussen. Mr. Claussen will remain in the employ of the Emergency Fleet Corporation and has been selected by the Shipping Board to be sent to the various ports on the Pacific Coast and in the Orient with a view to reporting conditions there with respect to the development of the trans-Pacific passenger services.

Mr. Boring is a graduate of the University of Kansas. He not only has had considerable newspaper experience, but more recently was assistant to the president of Montgomery Ward & Company and in charge of the firm's advertising department.

**Senator Joseph E. Ransdell,** president of the National Merchant Marine Association, has announced the appointment of the executive committee to serve for the coming year. In addition to Senator Ransdell, who is chairman ex-officio, the members are: William Allen, vice-chairman,

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Are Made for Work
—and to Work
And Work and Work

Ask for Catalogs

**American Engineering Company**
PHILADELPHIA

New Orleans; Edward E. Blodgett, Boston; Edwin H. Duff, Washington; Homer L. Ferguson, Newport News; Matthew Hale, Washington; W. A. Harriman, New York City; Meyer Lissner, Los Angeles; Winthrop L. Marvin, New York City; Frank C. Munson, New York City; and Captain William H. Stayton, Baltimore. The membership of the committee was increased from nine to eleven by the action of the recent convention of the association and the two members added to bring the committee to requisite number are Commissioner Lissner of the Shipping Board and Edward E. Blodgett, the well-known admiralty lawyer. Mr. Munson is appointed to succeed Hugh Gallagher, who resigned his membership when transferred from New York to San Francisco, as district manager of the Pacific Steamship Company. The remaining members are reappointed.

**Gale H. Carter** was elected president of the Pacific Mail Steamship Company at the annual meeting in New York in March, succeeding **George J. Baldwin,** who becomes chairman of the board. **M. C. Brush,** vice-president of the American International Corporation, and **Lawrence H. Sherman,** vice-president of W. R. Grace & Company, were elected directors to succeed Maurice Bouvier and N. Detaube, resigned. **H. S. Brophy** succeeded A. G. Bates as treasurer.

**Norman L. Snow** has resigned as vice-president and active head of the Terry Steam Turbine Company of Hartford, Connecticut, to become president and treasurer of the Diamond Power Specialty Corporation of Detroit, a new company that has purchased the business and plant of the Diamond Power Specialty Company, a copartnership, the members of which are retiring from the sootblower business in the Western Hemisphere.

## Deaths

**Harry C. Blye,** formerly a lieutenant commander, United States Navy, and a member of the crew of the Saginaw when she was wrecked on Ocean Island in 1871, in Monticello, New York, February 22.

**Mrs. Minnie A. Caine,** widow of the late Captain E. E. Caine and a part owner of the Caine-Grimshaw Company of Bellingham, Washington, in San Francisco March 5.

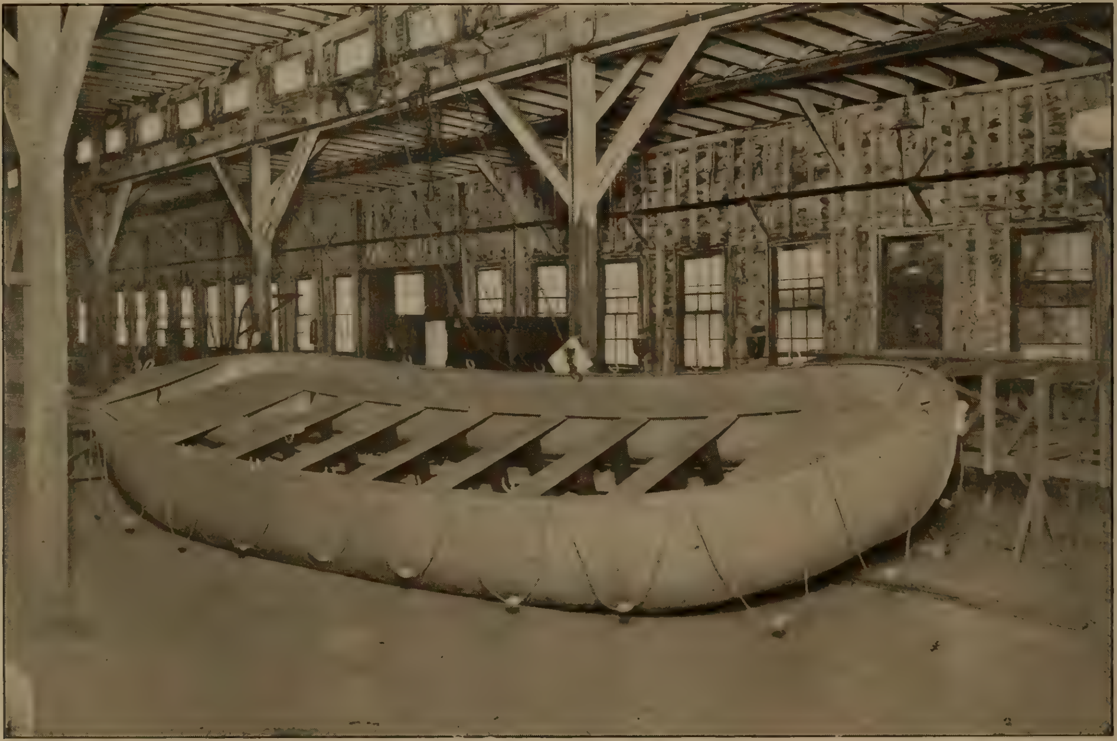
**Captain Thomas James Sacret,** retired master mariner, who served as a midshipman in transport services during the Crimean War, in Vancouver February 28.

**Captain Charles J. Swanson,** owner of a seamen's outfitting shop in San Francisco, was killed under an elevator February 26.

**Frank M. Deering,** member of the Gardner G. Deering Company, the well-known shipbuilding firm, in Bath, Maine, February 13.

**Captain Frederick M. Munger,** Revenue Cutter Service, retired, in Los Altos, California, February 25.

**Captain John S. Voss,** who made a cruise of the world several years ago in a small boat, in Tracy, California, March 2.



## New Nesting Lifeboat

THE Steamboat Inspection Service has recently completed tests of a new nesting lifeboat designed and built by the American Balsa Company of New York. This boat is built with a very rigid construction. Instead of the ordinary wooden gunwale it has a steel angle bar, and there is an outside flat bar keel of steel with double angle bar keelsons. This construction, together with the shape of the boat, makes such a rigid truss that when loaded to full capacity equivalent to 65 persons and supported at each end from the davits by the releasing gear the deflection of the boat's keel is less than 1/16 of an inch.

Carrying the same load, 65 persons, the boat when floating in the water showed a freeboard of 24 inches. With the entire load transferred to one side of the boat and piled on the side bench, the boat showed a freeboard of 7 inches on the low side.

It is 28 feet long with a beam of 9 feet 6 inches and a depth of 3 feet 6 inches and, after these tests, was officially allowed a carrying capacity of 64 persons.

The tests were conducted by the local inspectors of the Steamboat Inspection Service at New York and witnessed by two of the supervising inspectors of that service. These men were enthusiastic in their endorsement of the boat and pronounced it to be as suitable and as seaworthy as any nesting type boat that they had ever tested.

Our illustration gives a very good idea of the construction and arrangement and of the small vertical space occupied by each boat in nesting piles.

# Mahogany Imports

SIX months ago a group of mahogany importers and manufacturers met in New York and formed the Mahogany Association. The expressed purpose of the Mahogany Association was to further the use of genuine mahogany and by a campaign of publicity to teach the buying public something of the history and value of the wood that Chippendale Heppelwhite and Sheraton made famous.

The Mahogany Association recognized from the outset that it could not interest itself with methods of construction or even the kind of wood a particular manufacturer might choose to use for a particular job. It, however, had held that the name "mahogany" should be applied in all trades, and by such trades in their relations with the public, to articles actually made of genuine mahogany; and that it should not be applied simply to a stain or color used on other woods. Otherwise the term is untruthful and misleading. Its contention is for truth and accuracy in the use of the name "mahogany." This unassailable position has assured to its activity from the start the success that attends every campaign based upon truth and the square deal. The public and the reputable manufacturers and retailers are responding to their campaign in a gratifying manner.

As a result of this campaign and in order to carry on the work of furthering the use of this leader in cabinet woods, as well as to deal with matters of general interest to the foreign wood importing industry, a permanent organization was formed at a meeting held at the Hotel Commodore, New York City, on March 2 and 3.

Mr. Thomas Williams was unanimously elected president. The following were elected as members of the executive committee: T. R. Williams, F. D. Sawyer, Harry Freiberg, F. G. Otis, C. C. Mengel, Jr., and Douglas R. Allen.

Naturally, some discussion as to the future of mahogany in the United States was indulged in, it being pointed out that the wood occupied a prominent place in the furniture trade, the architectural and interior decorating fields, the piano and talking machine industries and in car building, shipbuilding, casket manufacturing and a number of other lines, by reason of its pre-eminence as a cabinet wood and the quality that it warps less than any known wood.

Attention was called to the fact that even today a mistaken opinion prevails rather broadly in the minds of the public and even of many in the above manufacturing and professional fields that genuine mahogany is both expensive and difficult to obtain; neither of these beliefs is predicated upon facts.

The meeting developed the rather interesting offset to these erroneous ideas that there is, first, in the neighborhood of 50,000,000 feet of mahogany normally imported into the United States each year; second, that its cost in lumber and veneer is such that the finished article made therefrom will cost but little, if any, higher than that made from several of our domestic hardwoods; and third, that this ultimate cost of the manufactured article leaves the article within the reach of the average income. A distinct feeling of optimism in connection with business conditions was evidenced at the meeting.

The Mahogany Association includes virtually all the importers and manufacturers of mahogany and other foreign woods in the United States.

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### AIRCO "D"

THE Air Reduction Sales Company has issued a new catalog leaflet describing its Airco "D" cutting torch. The leaflet completely describes the various features of design and construction of this apparatus and in addition gives tables showing the thicknesses of metals that can be cut, the pressures of oxygen and acetylene necessary, and the gas consumption in cubic feet per hour when using tips adapted to the cutting of steel, cast iron or rivets.

The leaflet, which may be secured from any Airco district office, is illustrated by sectional views of the torch.

Ship Repairs by Experts

Builders of Seventeen steel vessels, including their engines, windlasses and condensers.

GENERAL MARINE REPAIR WORK

HULL AND ENGINE

Contractors for some of the largest Repair Jobs Ever Done at the Port of Portland.

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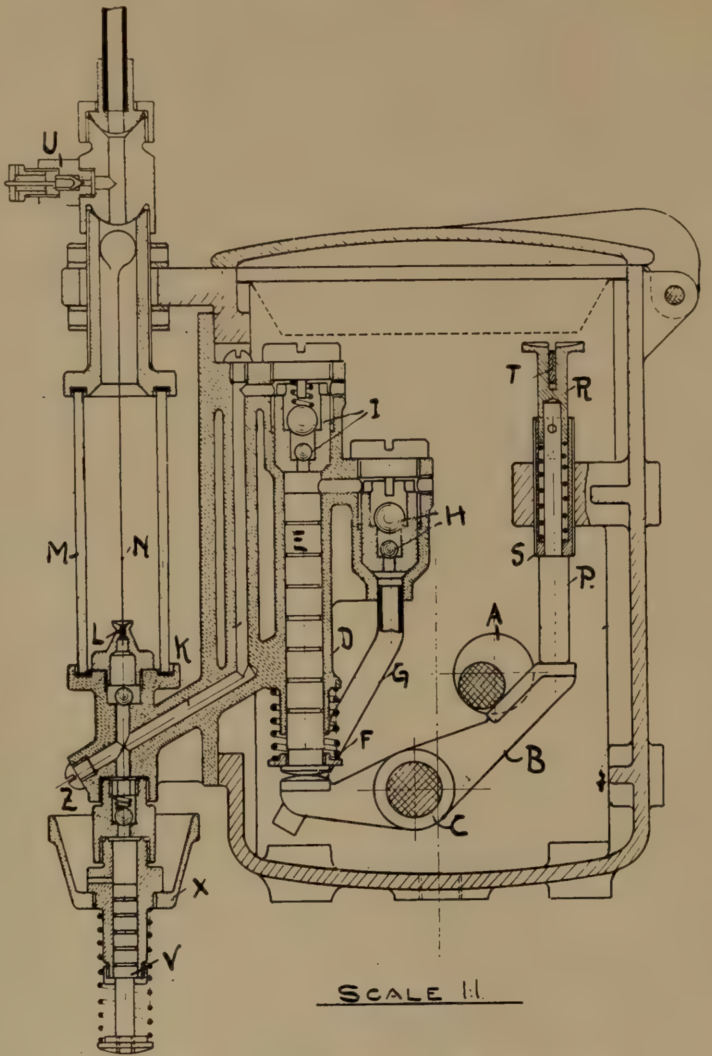
PROPELLERS
OF
*Manganese Bronze*

A 17' diameter Bronze Propeller made by us

BRONZE CASTINGS FORGINGS SHEETS RODS

AMERICAN MANGANESE BRONZE CO.
Holmesburg—Phila—Pa.
*(Send for complete catalog)*

# DENSIL POSITIVE FORCED FEED LUBRICATOR



Vertical section of Densil Lubricator showing positive pump action and adjustments

DURING a period of over ten years the Densil Motor Works, Ltd., of Denmark have specialized on the construction of lubricators for their own engines, as none of the existing systems satisfied them completely.

After having designed several different types, they finally developed the patented Densil positive forced feed lubricator, of which the following is a detailed description.

Referring to the letters in Figure I, the plunger pump D of hardened steel is actuated by the cam A through the lever B pivoted in the shaft C, the stroke of the lever being adjustable by the stop screw P. Any individual pump may be moved manually by simply pressing down the knob R, so giving additional supply momentarily as required.

The double suction and discharge valves H and I are in separate ground-in cages which may be taken out by removing the cover screws. The oil passes through the passage K and after going through L forms globules, which rise on the wire N through the transparent sealing liquid contained in the glass cylinder M.

A safety valve is provided at U, which relieves the pressure in case of a choked pipe and also indicates the obstruction and its location. A cup X mounted on a small auxiliary plunger pump V and a non-return valve Z is provided, so that an injection of paraffin may be given as desired, by filling the cup, drawing down the plunger and then forcing it up. This paraffin injection has been found very desirable for piston and cylinder lubrication.

### Salient Features

1. The quantity of oil supplied to each individual feed line can be adjusted while running.

2. Additional oil can be given by hand at any moment by simply pressing the knob R of the adjusting screw of any individual pump.

3. The oil supply under pressure is always visible through the glass sealing tube and the liquid (glycerine or water) contained therein.

4. The suction and discharge valves and their seatings are most easily accessible and can be taken out bodily for cleaning, exchanging or inspection purposes by simply removing one cover screw for each valve. This can be done while the engine is running.

5. Each individual pump with its sight feed and all parts may be completely removed from the box without disturbing the others.

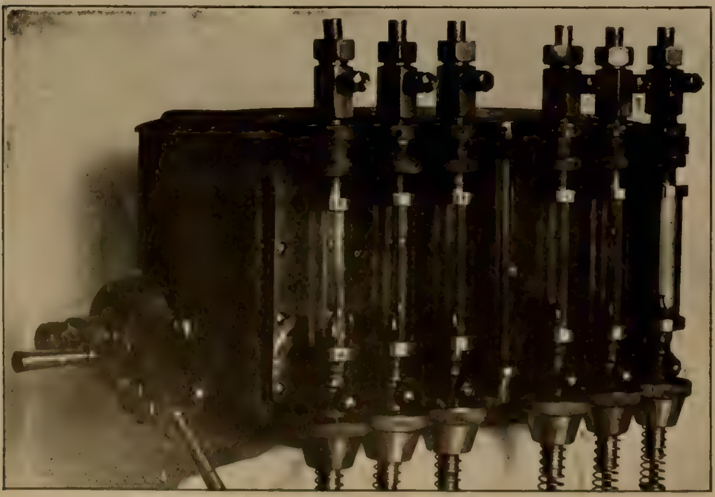
6. The heavy glass tube cannot leak or burst, as the safety valve relieves an excess of pressure and indicates obstruction in the piping.

7. No matter what the temperature or viscosity of the oil, the oil supply to the feed line is always and constantly the same, provided the oil is not solidly frozen, the quantity depending only upon the stroke of the plunger, which is adjusted by the stop screw P.

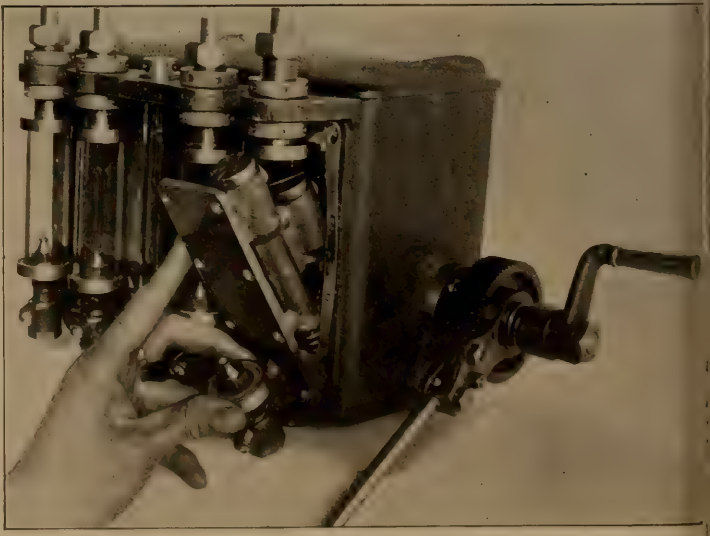
8. All parts are made to Johannsen gauge of the finest materials and absolutely guaranteed interchangeable.

9. Contrary to other systems, the Densil plungers are made of hardened steel ground to fit and are not packed by any packing gland whatever; moreover, the entire pump, including both valves, is submerged in the oil, thereby making impossible the leakage of air through such glands or other channels and consequently completely eliminating chances for pumping air instead of oil into the oil line.

10. The ratchet drive is of exceptional strength and the pawl and teeth have large surfaces. This drive is located outside of the oil



Densil Lubricator for six feed lines



Densil Lubricator showing removal of individual pump container and is infallible in action.

11. The cam shaft has a spring loaded cone brake which prevents oscillation with the ratchet arm during its idle period.

12. Piston and cylinder can be supplied with a few injections of pure paraffin oil for a short time. This has proved to be very beneficial for keeping these parts in good working order during long uninterrupted working periods of one or two months.

Every engineer familiar with lubricating problems will admit what experience has taught us, that the best is none too good.

The Densil lubricators are made in various standard sizes, from one to twelve feeds per box, and also a smaller type, B, for high speed engines up to 600 R. P. M.

European manufacturers of Diesel, kerosene, gas, steam, compressor and other engines are showing deep interest in the Densil lubricators, and the device is now being introduced into the American market by William Braat of 154 Nassau Street, New York, who represents the Densil interests in the United States and Canada.

# New Service for G. T. D. Customers

As part of Greenfield Tap & Die Corporation's service to its customers, a carefully compiled and comprehensive telegraph and cable code has just been published. Although the code was originally intended for the concern's overseas customers, it is equally suited for its domestic friends and will prove the means of materially reducing the cable and telegraphic expense of those who have occasion to order goods by wire.

The code as now published represents several years of work in classification of cables sent and received by the home office. It is a five-letter code, and so arranged that it can be combined with the majority of standard commercial codes. The highly technical nature of many of the GTD Corporation's products, which range from screw plates, taps and dies to drills, reamers, gages and machine tools, makes it impossible economically to describe them by any standard code.

Not only does the new GTD code cover every item of manufacture by the concern, and the usual features relative to orders, quotations and financial matter, but also such pertinent items as exchange, technical terms of the trade, etc.

The code is included in the new No. 46A catalog just issued by the Greenfield Tap & Die Corporation and is also separately bound.

Coding of orders by the domestic trade will not only save words, but will insure correct transmission of technical specifications, as the code is self checking.

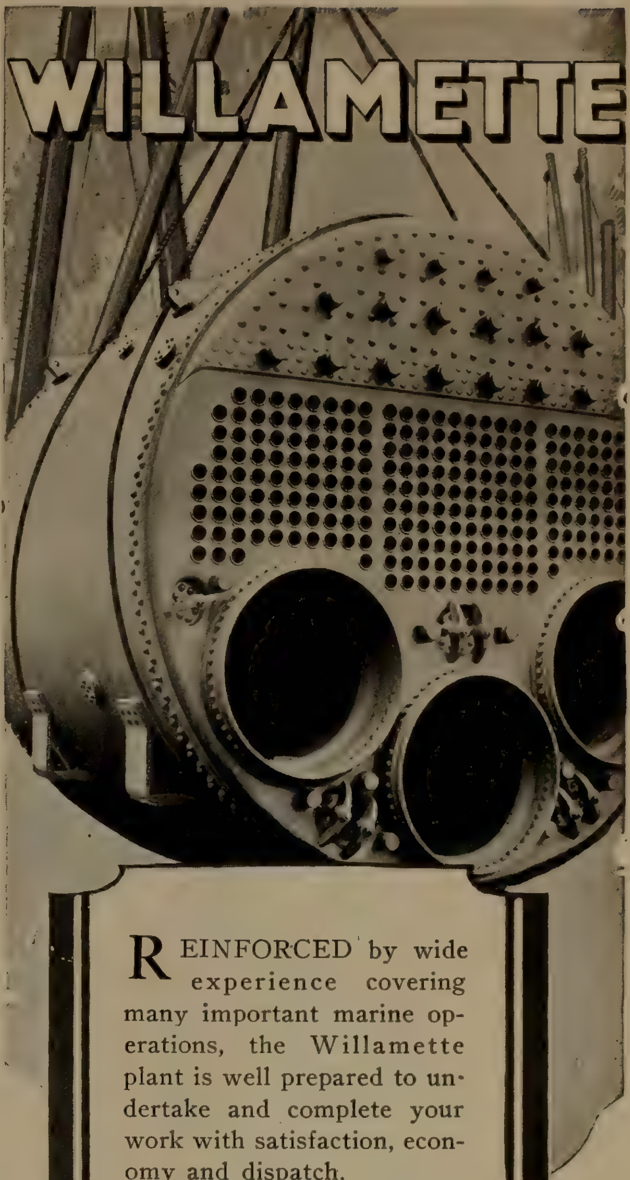
Copies may be obtained at the home office, Greenfield,

# A Comfortable Folding Chair

THE Klosepak folding arm chair, made by the Klosepak Chair Company, Camden, New Jersey, is, according to all who have sat in it, "the most comfortable and convenient folding chair" on the market today.

This chair folds up in a bag, which is supplied with it, and the whole affair weighs only 7 pounds, yet it will support 400 pounds easily. It is well made and has a good appearance.

As a deck chair for passenger liners it is ideal, and on account of its patented construction, which makes possible folding into a very small compass and stowage in minimum of space, it has been found to be invaluable to yachtsmen, campers, cottagers, country clubs, etc.; in fact, "wherever an extra chair is needed."



REINFORCED by wide experience covering many important marine operations, the Willamette plant is well prepared to undertake and complete your work with satisfaction, economy and dispatch.

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MARINE AND
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OF ANY CHARACTER

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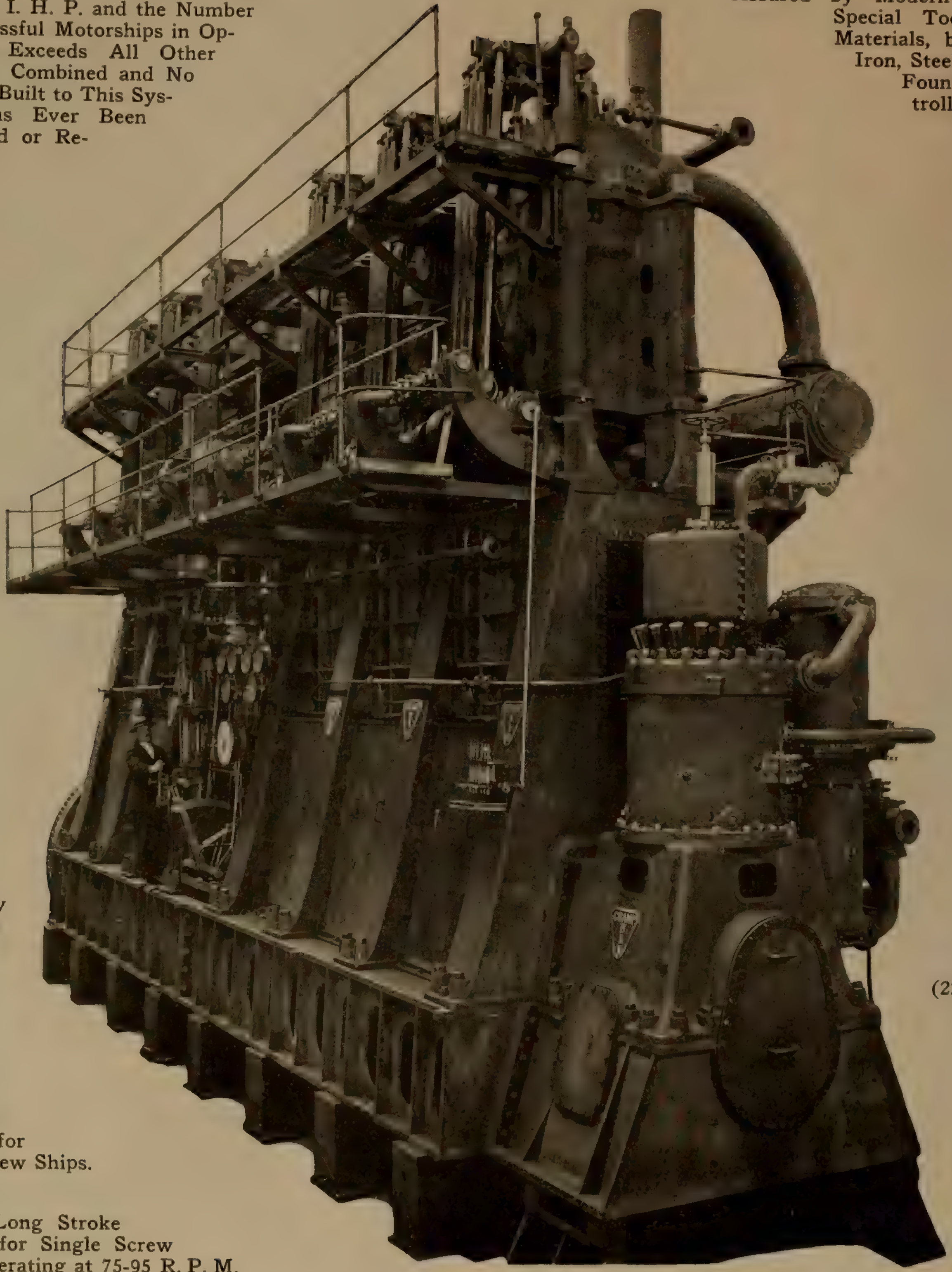
Under the B. & W. System the Aggregate H. P. in Vessels from 1500 to 6600 I. H. P. and the Number of Successful Motorships in Operation Exceeds All Other Systems Combined and No Engine Built to This System Has Ever Been Removed or Replaced.

Accuracy and Interchangeability Assured by Modern Jigs and Special Tools; Proper Materials, by Cramps' Iron, Steel and Brass Foundries Controlled by a Modern Laboratory.



Motorships That Stay on the Seas.

Diesel Engines That Stay in the Ships.

Port Engine (2250 I.H.P.) M.S. "Californian"

Standard Engines for Twin Screw Ships.

Special Long Stroke Engines for Single Screw Ships Operating at 75-95 R. P. M.

THE WM. CRAMP & SONS S. & E. BLDG. CO.
PHILADELPHIA, PA., U. S. A.

BUILDERS OF COMPLETE MOTORSHIPS TO ONE STANDARD OF WORKMANSHIP AND ONE GUARANTEE FOR PERFORMANCE
(Burmeister & Wain System)

# Pacific Marine Review

The National Magazine of Shipping

WESTINGHOUSE ELECTRIC

## The Sea Imposes Special Problems!

Recognizing that marine service conditions and requirements are fundamentally different from any other, the Westinghouse Marine Organization rigidly adheres to the policy of constant study and analysis of marine applications and close co-operation with Naval Architects, Marine Engineers and Ship Operators.

The work of the Westinghouse Marine Organization is exclusively marine.

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Pacific Marine Review, Vol. 19, No. 5. Published Monthly at San Francisco. Entered as second class matter at the post office at San Francisco under the Act of March 3, 1879. $3.00 a year.

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2012-22

# Pacific Marine Review

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J. S. HINES
Publisher

B. N. De ROCHIE
Business Manager

A. J. DICKIE
Editor

ANDREW FARRELL
Associate Editor

L. R. MERRICK
Field Editor

M. G. HEDIN
Advertising Manager

PACIFIC MARINE REVIEW,
THE NATIONAL MAGAZINE OF SHIPPING
576 Sacramento Street, San Francisco

339 at No. 30 Church Street,
New York City

500 Citizens National Bank Building,
Los Angeles

Official organ of the Pacific American Steamship Association

Entered as second class mail matter June 20, 1913, at postoffice, San Francisco, under the act of March 3, 1879.

Subscription price, a year (domestic) ........ $2.00
(foreign) ........ 3.00
Single copies ........ .25

Published on the fifteenth of each month. Advertising forms close on the tenth and editorial forms on the twelfth.

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FOR twenty-odd years, the New York Shipbuilding Corporation has fashioned ships of highest character. Expert craftsmanship has constantly been employed in order that the finished product should give definite and dependable service. And, because this ideal has faithfully been adhered to, keels, laid in these yards, are ploughing the Seven Seas, carrying passengers and freight safely and surely to and from all known ports.

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NEW YORK SHIPBUILDING CORPORATION

*Pacific Marine Review*
The National Magazine of Shipping
*May, 1922*
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# Hail and Farewell

**With the delivery of the combination steamship Western World by the Sparrows Point Plant, Bethlehem Shipbuilding Corporation, on or before May 15, building for the Emergency Fleet Corporation will be brought to a close. A complete table of construction by yards appears on page 271 and succeeding pages.**

THE last chapter of the Emergency Fleet Corporation's construction is near completion; "the end" is being written, doubtless with a flourish and a sigh of relief, and the pen laid aside. In the making of the book more than five years has been absorbed, and five years is a long time during which to maintain interest in one narrative, even if the later chapters had been as engrossing as the earlier. Such they were not, because with the signing of the armistice the building of ships to defeat the German submarine menace became unnecessary; the public turned with a glad cry to jazz music (if music it be), and even the world of shipping itself manifested more interest in the operation of vessels than in their construction. The result is that the book is closed and laid aside thoughtlessly, and few persons allow themselves even a few moments of reflection on what is contained therein.

But this should not be. On the score of magnitude alone the Emergency Fleet Corporation compels admiration not unmixed with awe. Unquestionably it was the greatest single industrial feat ever undertaken by man; perhaps, indeed, it was the most enormous work of any nature: we may speculate as to which was greater, the work of building the fleet or of erecting the Pyramids; which is the more imposing, the "bridge of ships" or the Great Wall of China; we may inquire whether the hundreds of vessels owned by the United States government do not represent more man-days, more man-years, more man-centuries, than any other single task that humanity has assumed.

### An Echo Heard in Potsdam

All this deals with the physical aspect alone. That is the least important and impressive. Analysis and reflection disclose that the construction of the fleet was one of those "imponderables" that, thrown in the scales, incline the balances to victory. To object that the fleet came into being too late to be of any material advantage to the Allied cause is much the same as asking: "What good came of all the millions of men recruited in the United States? How many reached the firing line?" If those questions were asked the answer would be that the streams of Yankee bayonets in France, continually fed by vast and increasing reservoirs in the United States, gave Foch the mobile army that he must have if he were to attack; those bayonets supplied reserves; behind the relatively few Americans that the German met crowded horde after horde of others, and the psychological reaction was no less disastrous to the enemy than was the physical. So of the Emergency Fleet Corporation's vessels. They ended the submarine menace; they made it futile and inane, for the U-boats of Germany, already harried hard by the swarms of Allied mosquito craft, could not by any stretch of war-inflamed logic hope to succeed. The submarines could not prevent the transportation of men and munitions and supplies to France; most important of all, perhaps, they could not starve Britain to surrender. Those launchings of July 4, 1918, in creating "the splash heard 'round the world," sent an echo into the throne-room that soon was to lack an occupant.

### The Links of Victory

When the great history of the world war is written by some man years hence, when what may be called the world-psychology has approached the normal and dispassionate again, that writer will find more than one outstanding link in the chain of Allied victory. For the chain is not uniform; the individual links are curiously diverse, some are strong but many are weak. Whatever the ideal historian of the future may judge of the Allied conduct of the war, he is likely to dwell largely upon certain stupendous events making for Allied success: the First Marne, the defense of Verdun, the Great Retreat of the Grand Duke, when he saved his armies from Mackensen and so prolonged the stay of the Russian armies on the Eastern front; and last, the unprecedented battle that began March 21, 1918, and continued for eight months of flame and roar on one front after another until the German assault waned and the Allies assumed the offensive that ended November 11.

In this catalog what place has the war-time shipbuilding of the United States? Surely somewhere near the top. To speak more definitely is difficult, because the elements that must be weighed are psychologic. How much had Germany staked on the submarine campaign; what had the people of the Central Powers been led to expect? The problem thus presented is not susceptible of precise solution, inasmuch as the mental processes of men cannot be reduced to mathematical formulae; but it does appear that Germany had expected much from the destruction of merchantmen, else the Central Powers would not have invited the intervention of the United States; and if this premise be granted, the Emergency Fleet Corporation's program becomes of the utmost importance. Let us assume that the increased success of defensive measures and the laying-down of hundreds of keels in the United States forced the Germans to face an actual or potential defeat at sea. In either case, whether the defeat was at hand or impending, whether it existed as a physical fact or merely as a somewhat remote probability, the effect is much the same, for nations and armies that think themselves defeated are almost sure to undergo defeat in reality. If, then, effort aimed at a decision at sea had failed, the German general staff must have seen the imperative necessity of crushing the Allied armies before the Americans arrived in too great force; hence the amazing wastage of the German divisions that began in March, 1918, and left the Hindenburg line a shell through which the British were to break a distance of fourteen miles in three days.

### They Accomplished the Impossible

In any event, American shipbuilding undeniably had a pronounced moral effect on the Central Powers. As a war measure it was completely justified. It would have been eminently worth-while if every vessel owned by the Emergency Fleet Corporation were at the bottom of the sea today. Those gentlemen, both at home and abroad, who sneer at the United States merchant marine would do well to bear those facts in mind. What if there were inefficiency, wastage and graft—though surprisingly little of the last; what if many vessels are hardly seaworthy? Did we not, when the armistice was signed, find ourselves in possession of enormous stores of all sorts, ranging from 14-inch shells to ointment for mustard-gas burns? In few cases, if any, was the salvage ratio so high as with the merchant fleet.

Largely because so much salvage was possible, but also because construction was carried on after November 11, 1918, the United States government owns the largest merchant fleet of the world. Each vessel, whether laid down before or after the cessation of hostilities, represents a legacy of war-time, for such a huge program of construction necessarily attained a momentum that carried it far through the years and in many cases, moreover, completing a vessel was actually cheaper than scrapping her. Operating this fleet is a problem of peace, as building it was a problem of war. In discussing the future of the ships we should not lose sight of their past; neither we nor any other nation should forget that they were constructed in a spirit of unselfishness, with scarcely a thought being given to their ultimate employment, and that sneers and gibes, whether from Americans or foreigners for whose benefit the steamers were laid down, come with a peculiarly ill grace. No one who had part in the Fleet Corporation's activity need be ashamed; the fleet is a monument to the people of the United States and to American shipbuilders, whose technical skill and tremendous energy accomplished the impossible. A. F.

## The One-Time-Won't-Hurt School

ANY proposal that the navy yards of the United States be permitted to do work for the Shipping Board in competition with privately-owned plants is admissible only on one condition, that overhead, interest and depreciation be computed as rigorously as in the best-managed shipyards of the country. It is, however, precisely this condition that sponsors of the plan would be most loath to accept, for they recognize, if they do not deliberately shut their eyes to implacable facts, that a competent private ship-repair plant, all factors being equal or similar, can do work more cheaply than can the navy yards. But those who urge the extensive employment of navy yards for Shipping Board work decline to weigh all elements; in some cases the naive proposal has been made, quite openly, that overhead and depreciation should not be taken into account. To this extreme did Representative Hull of Iowa go in H. R. 10967, which he introduced March 21.

### Dealers in Opiate Half-truths

Mr. Hull and those who think as he does belong to the one-time-won't-hurt school of economics. The grave fault with the mental processes of these gentlemen is that they are unable to see the end to which some apparently wide and easy paths lead. They deal in half-truths, in opiate half-truths, that, however much they may please the imagination in small doses, eventually stupefy and destroy. The arguments of the one-time-won't-hurt school may not unfairly be summarized thus: "Whether the navy yards do Shipping Board work or not, they must continue to exist; their overhead, depreciation and interest costs and charges must go on; therefore, any saving that the government might make in sending vessels to its own plants for repairs is clear gain." One might admit, quite candidly, that the statements contained in that summary are true, and yet deny the right of anyone to extend the application of the doctrine indefinitely. What is truth in a small degree or in an isolated case may become fallacy of the most pernicious sort if the field be broadened. A pat example is in the proposal of Henry Ford and Thomas A. Edison that fiat money be issued for the Muscle Shoals project. These eminent men, surely two of the remarkable individuals of the world, able enough in their own spheres, also belong to the one-time-won't-hurt school: fiat money leads to economic collapse, as any banker or business man of Russia or Austria or even Germany may testify. It is the practicability of universal, or at least of extensive, application of any doctrine into which we must inquire.

### A Vicious Spiral

Subjected to such a test, the use of navy yards without forcing them to take account of overhead, depreciation and interest stands exposed as the fallacy it it. Those items of expense, which every well-managed private business must and does consider, are the blind and implacable natural forces of industry. They exist; they cannot be explained away; they may be ignored, but not for long. Men must be paid for supervision; interest must be met; machinery will deteriorate and wear out. Now, if there were any extensive use of navy yards as opposed to a merely sporadic use, those items would increase by geometrical progression: the working force of naval constructors that was adequate for one vessel a month would be insufficient for twenty; the tools that were kept in better condition for being used would be damaged and worn; and so the vicious spiral would widen. The result would be the passing on to the Navy Department of costs that properly should be borne by the Shipping Board; and we should see again the rare philosophy of the ostrich, which denies the existence of a thing because he has put his head in a hole in the sands. We should discover an incredible number of crimes committed in the name of bookkeeping, for, as Plato or another was wont to observe, "figures don't lie, but liars sometimes figure." In the end, it seems certain, the cost to the government would be greater than it would if private yards did the work; and this consideration is of lesser importance: the people of the United States have manifested an earnest desire to see the government retire from competition with private initiative in any guise.

If the Shipping Board wishes to use navy yards as a check on other plants, the end would be gained by accepting bids or "estimates" (although the latter should be as binding as a bid is upon a private yard), but in no event should the natural forces to economics, overhead, interest and depreciation, be ignored.

## The I. C. C. Speaks

BY permitting railroads of the Mississippi Valley to put into effect reduced rates on cargo moving from central freight territory to Gulf ports for transshipment to the Pacific Coast by way of Panama, the Interstate Commerce Commission has delivered a telling blow at the transcontinental rail lines. Once again the Chicago-Pacific carriers have met the enemy; once more they have tasted defeat; and unless portents fail they are about to receive still another and worse drubbing. Apart from the fact that the transcontinental lines have been defeated, it is noteworthy that their conqueror was a coalition of other railroads and steamship lines. Here lies the true meat of the whole affair: some powerful Middle Western and Southern railroads have gone over to the enemy bag and baggage; they turned their backs on their supposedly natural allies, the transcontinental lines, and published tariffs that would divert cargo to the rail-and-water route.

To assert that in so doing the Mississippi Valley lines merely had an eye to their own interests is to utter a truism. Their own interests do lie with the Gulf-Pacific steamship lines and not with the transcontinental railroads. One might go farther and say that the time is near at hand when the Eastern railroads also will realize that they have more to gain from a frank alliance with the North Atlantic-Pacific Coast steamships than they can hope to receive from diverting freight to the transcontinental carriers; when that time does come, overland transportation of freight will be largely a thing of the past, and the eminently desirable co-ordination of rail and steamship lines will have become an accomplished fact. It may be that this state will be realized long before any final decision can be handed down on the suspension of Section 4, now pending before the Interstate Commerce Commission; in other words, even if the transcontinental railroads should succeed in their effort to establish lower rates to tidewater than to the interior, thus meeting steamship competition, they would discover that their victory was purely formal and hollow. To some railroads, especially those that serve sparsely-settled and unproductive regions of the intermountain country and accordingly have been largely dependent upon through freight, the outlook is by no means promising; but their loss will be more than offset by the gain of the country as a whole, for the greatest immediate benefit of the Panama Canal to the people of the United States is in reduced costs of transporting domestic freight.

## Prices of Tonnage

THOSE are interesting figures that come from Japan in the form of an announcement by the Kobe Shipping Exchange that Japanese purchased in Europe during the six months ending January 31 thirty-five steamships of an aggregate of 191,158 deadweight tons, for which a total of £875,000 was paid. These rather extensive purchases—extensive in view of the world shipping depression—may augur better times, as indicating that various canny Nipponese owners are preparing for an expected increase in trade; aside from that phase, they are interesting in the light they shed on current prices of tonnage.

Evidently prices abroad are holding up, in the main, better than they are in the United States. The average paid for the thirty-five vessels was £4 11/ a deadweight ton, or approximately $17 to $18 as exchange has been during the last nine months. At first glance the figure appears to be low, too low to cause anyone to see in it a sign of improvement; but one significant fact remains to be stated: the average age of the vessels was no less than eighteen years; the oldest, indeed, was built in 1890. For this vessel, singularly enough, the price paid was about £4 4/ a deadweight ton, or only a trifle below the average.

One might draw any number of conclusions from the tables published by the Kobe Shipping Exchange. One deduction, however, that prices of steel steamers are on the mend, does appear to be well-founded. On the other hand, there is the recent sale of the Shipping Board steamship West Hartland to be considered. The board having petitioned for limitation of liability for the loss of the Pacific Steamship Company's Governor, which was sunk in collision with the West Hartland, the latter vessel was ordered sold. Private bidders stopped at $134,500, and the board itself bought the vessel in at $135,000, or at a price of $15.34 a deadweight ton. A much larger price was paid for two Lake vessels, however, the board having sold two 3400-tonners for $151,000, or $22.21 a deadweight ton.

Time alone will tell what should have been the prices of steel steamships during the year 1922. Until time does decide, those interested may find in the figures here given something to occupy their minds.

## Kobe's Hour of Rejoicing

ON a number of printed sheets that pass for maps, but which are anything else, appears the name of a place called Hiogo or Hyogo. It is in Japan, near the eastern entrance to the Inland Sea. On these same so-called maps is the name of Kioto or Kyoto, situated a quarter-inch from Hyogo; but at the same time there is a singular omission. The name Kobe does not appear. Perhaps the omission is explicable on the ground that Kobe was not opened to foreign commerce until 1867; whatever the explanation, Kobe cannot be ignored by any person interested in the Pacific Ocean and its trade.

Kobe demands attention today because it recently celebrated the completion of its 1907 program of harbor improvements. More than yen 16,000,000 has been spent on warehouses and wharves and in dredging slips for the accommodation of ordinary trans-Pacific vessels as well as large steamers of the Minnesota class. Not at all satisfied with this program, the imperial government and the municipality embarked on a second, to complete which will require about yen 15,000,000; and doubtless as time goes on, and the trade of Kobe and the manufacturing of Osaka increase as they seem certain to do, a third plan will be brought forward.

But harbor facilities mean little unless trade swarms to a port. Accordingly the city of Kobe, already blessed with probably the largest volume of cargo of any port of the Pacific, casts a longing eye on Yokohama's export trade in raw silk, and now proposes the formation of a 10,000,000-yen corporation to foster shipments of that valuable commodity. Although one might reasonably doubt the efficacy of artificial stimulation of trade, such as this new plan well might be, Kobe nevertheless is displaying a remarkably enterprising spirit. The port deserves the success it has attained. On this occasion of the completion of its first harbor work, it merits the congratulations of its sister ports, from Seattle to Sydney and from Valparaiso to Vladivostok.

## One of the Old School

THE passing of George H. Higbee, who died in Berkeley, California, March 23, means the loss of a conspicuous member of the old school of American steamship operators, never very large and subject to rapid depletion, as its personnel dwindled with the years. Mr. Higbee emphatically was of that old school, for, having entered the service of Peter Wright & Sons many years ago, he retired from active business in 1914 just when the United States merchant marine was beginning to revive under the stimulus of war. His entire business life, therefore, lay within those years of American shipping when our merchant marine was almost negligible, but the very paucity of our tonnage and the immense difficulties that dogged the steps of operators did result in the immediate elimination of the unfit, and the breeding of a remarkably able race of survivors. Of this race, Mr. Higbee was among the leaders.

Mr. Higbee was born in Moorestown, New Jersey, in 1852. His first service was with the old-time firm of Peter Wright & Sons, Philadelphia, steamship charterers and operators. This firm managed the steamers Illinois, Ohio, Indiana and Pennsylvania, which were built by the International Navigation Company. After a time the company decided to operate its own vessels, and accordingly drew its operative force from that of Peter Wright & Sons, who had been handling the steamers. This corporation Mr. Higbee joined as Philadelphia manager. When the International Navigation Company formed the Empire Line as its Pacific Coast subsidiary in 1898, Mr. Higbee went to the Pacific as general manager. During the Spanish-American War the Empire Line vessels were chartered to the United States government as transports, engaging after the war in the Alaskan trade. In 1893 Mr. Higbee returned to the Atlantic as New York manager of the newly-formed International Mercantile Marine Company; in 1906 he again removed to the Pacific to become president of the Seattle Construction & Drydock Company, and in 1909 became vice-president and general manager of the Pacific Coast Steamship Company. After a service of five years with that company he retired in 1914 because of ill health.

He was a man of sterling principles. Markedly reserved, he nevertheless impressed himself upon all who came in touch with him, either in business or social life, as a man of enduring force of character, a character made up of an unerring sense of justice, coupled with an innate kindliness, which won for him not only the sound respect and loyalty of business associates, but the lifelong affection of many friends.

## The Tax on Reading

ONLY about 8 per cent of our boys and girls attend educational institutions above the grammar grades. The balance of the population depend almost exclusively for their education upon general reading, which means usually the reading of periodicals or the daily press.

For this reason the Federal government has always recognized the necessity for low postal rates on newspapers and periodicals. In the effort to raise the tremendous war budget, special increases were levied on these rates by the revenue bill of 1917 and the rates now amount to four times the pre-war charges. The publishers as a body feel that these increases were excessive, and especially so since the publishing industry has been paying its proportionate share of all other special war taxes levied upon the industries of the nation.

The results of the imposition of these exorbitant postal charges have been very varied. Some publishers have increased subscription rates greatly. Others have stopped solicitation of subscriptions in sections remote from place of publication. Many publishers, trying to absorb the additional costs, have been forced out of business.

In 1918 the Federal government collected from publishers $11,712,068.18, and during the current year it is estimated that the government will collect for the carriage of this class of mail over $33,000,000. These huge sums are being collected notwithstanding the fact that the high postal rates have forced out of the mails an enormous tonnage of newspapers and magazines which are now carried by express, baggage, motor truck or freight.

The classes of publication upon which the burden falls most heavily are business and technical journals, agricultural papers, religious magazines, fraternal organs and educational periodicals, all of which are practically a necessity to the classes of population whom they serve and all of which are in a very real sense the greatest educational agencies at work in America today.

A bill now proposed in Congress and sponsored by the American Publishers' Conference calls for the repeal of the last two increases, which went into effect in 1920 and 1921. The bill will not in the least affect the present zone system nor the present free-in-county privilege enjoyed by the smaller weeklies and dailies. The rates asked for in the bill would give the government approximately 175 per cent more than the prewar rates.

Inasmuch as various other industries have had removed entirely or materially reduced the special taxes imposed by the war revenue bill, it seems only fair to the publishing industry and to the reading public that this bill should be passed and the postal rates reduced.

The reduction asked for would mean $8,000,000 per annum less receipts for the postoffice department with the present tonnage of mail. It may be confidently predicted, however, that such a lowering of the rates will attract back into the mails sufficient additional tonnage to more than offset this apparent loss.

## The Merchant Marine Act of 1922

THE hearings on this measure, commonly known as the Subsidy Bill, before the joint committee of commerce for the Senate and of merchant marine and fisheries for the House are developing some very interesting testimony. Up to date the witnesses have been largely experts and commissioners of the United States Shipping Board, and the inquiry has largely taken the form of investigations into the intentions of the Shipping Board as to its methods in carrying out the provisions of the act.

Perhaps the most interesting testimony in this regard was that of R. T. Merrill, director of the bureau of research of the board, who read a very lengthy and very carefully prepared statement covering practically all the features of the bill. In this statement and in the cross-examination that followed, he discussed the application of the direct aid section of the measure to the present privately-owned foreign trade fleet under the American flag. The amount of this direct aid he estimated would be about $12,500,000, divided among the various classes of vessels about as follows in round figures: tankers, over $4,500,000; small cargo vessels, $1,600,000; large fast cargo vessels, $1,800,000; small passenger ships, $1,750,000; larger passenger vessels, $1,596,000. Should the entire Shipping Board fleet of steel vessels be sold today, Mr. Merrill calculated that the direct aid would amount to $32,000,000 annually.

Shipbuilders will be interested in Mr. Merrill's statement that in order to have a well-balanced fleet for our commercial needs, it would be necessary to build 1,500,000 gross tons of the higher class freight and passenger vessels, in addition to replacements and conversions of many present ships. This ideal fleet for foreign trade would include 3,600,000 tons of slow cargo vessels, 1,250,000 tons of fast cargo vessels, 750,000 tons of combination passenger and cargo vessels, 400,000 tons of fast passenger liners, and about 1,500,000 tons of tankers. It is estimated that this ideal fleet would require direct aid aggregating a little more than $29,000,000 annually for a limited period of years.

It would be extremely difficult from the attitude of congressmen and senators at the hearings adequately to analyze the sentiment of Congress toward this pending legislation. Democratic members of the committee have developed the old opposition to the Shipping Board and all its works rather than opposition to the measure itself, and there is the same tendency that has always been evidenced at these hearings toward wandering off into the mazes of British maritime history from the time of Cromwell, or into petty dissension on the meaning of a word, or into technicalities of various sorts.

A very good example of the mincing character of the testimony with regard to words used occurred in the cross-examination of Mr. Beecher, counsel for the Shipping Board. Judge Davis called attention to the fact that the word "subsidy" does not occur in the bill, that the word "aid" is used once or twice, and that the word "compensation" is used quite frequently. He wanted to know why "compensation was to be paid to the operators"; Mr. Beecher informed him that "compensation", in the strict legal meaning of the term, meant the placing of persons on a parity and not the payment of benefits in return for services performed. This little dispute on words sent several members of the committee to the dictionary, and Mr. Beecher's contentions with regard to the word were upheld.

Right here we wish to state that it seems to us that the so-called "direct aid" contemplated in this bill is neither "subsidy" nor "compensation", but is rather accommodation in the nature of a revolving loan fund to tide an infant American merchant marine in foreign trade over what might be called the training period of its existence, and that if by the application of such loan the United States can relieve itself of the burden of operating or maintaining its present fleet of merchant steamers this loan will be the best investment from a purely commercial standpoint that has ever been made by the Federal government.

Present indications are that the bill will pass rapidly through the House on its first hearings, but will be held up for considerable time in the Senate. It is hoped that the report on the bill will be presented early in May.

## Ship Repair Bill

A MEASURE recently introduced in the Senate and referred to the Committee on Finance, proposes to amend Section 3114 of the revised statutes so that all vessels documented under the laws of the United States to engage in foreign or coasting trade shall on the first arrival of such vessels in any port of the United States be liable to a 50 per cent ad valorem duty for any repairs made or equipment purchased in a foreign country.

The present statutes apply this 50 per cent duty only to vessels engaged in such trades on the coastal frontiers of the United States. The proposed change would make the section apply to vessels in all trades and contains no emergency exceptions, so that an American vessel in the foreign trade, shipwrecked on a foreign shore, would be liable to this duty for 50 per cent of the cost of her salvage and repair immediately upon her return to an American port, and any American vessel which had been engaged in trading for a number of years between foreign ports exclusively would by this measure be practically prohibited from ever entering an American port.

This is a piece of class legislation which in our opinion should be quashed. The present law adequately takes care of the coastal frontier situation, and the proposed Merchant Marine Act of 1922 takes care of the situation so far as foreign trade is concerned.

It may be advanced by the proponents of this measure in extenuation that the number of American ships trading between foreign ports is insignificant. On the other hand, if we are really to get into the foreign trading business with our American ships in competition with the ships of the world, one of the most essential factors in our success will be the establishment of adequate feeder services, under the management of American agencies, and using American bottoms for the collection and distribution of American cargoes on foreign coasts.

## The Case of the Wooden Shipbuilders

THE United States Shipping Board, after considerable haggling lasting over a long period, has finally announced a definite policy for the settlement of amortization and profit claims of the wooden shipbuilders. This announcement lays down rules in the settlement of canceled contracts where the original lump sum contract was canceled and superseded by the cost plus contract, and it applies to all straight cancellations. These two rules:

1. Allow the contractor in full that portion of the fees which by the express terms of the contract is apportioned to plant depreciation.

2. Allow the contractor a percentage of that portion of the fees which by the terms of the contract is allocated to profit, such percentage to be based on the total portion of work performed on such canceled hulls.

These rules having been laid down, the Board proposed a basis per vessel of $7000 for amortization and $8000 for profit on all new contracts executed by the Board. In cases where a vessel was only partially completed a proportionate amount of the $8000 would be allowed.

The wooden shipbuilders claim that at the time when bridging the Atlantic with wooden ships was the slogan, they were verbally assured by the Shipping Board that they would be given enough contracts to complete the amortization of the necessary addition to plant. The Shipping Board denies that any such assurance was given. Seventy wooden shipbuilders are involved, their amortization claims alone amounting to approximately $6,000,000. The amount which the board will be called upon to pay if these latest rulings are accepted will be less than $600,000 for amortization, or approximately 10 per cent of the claims. The amount for profits to these seventy shipbuilders will be slightly over $400,000, and it would seem probable in view of the time interval that when this amount of cash shall have been paid into their hands it will already have been more than eaten up in the expenses incident to collecting the profits.

## Foreign Trade Club

ON May 9, 1917, twenty San Francisco men completed a plan for organization and signed the charter roll of the Foreign Trade Club of San Francisco. This club was at that time decidedly an experiment. It was really the first organization of its kind in the world. The project thus launched grew and prospered, made connections all over the United States and throughout the civilized world, and became the pioneer for a large and constantly growing number of foreign trade clubs both in the cities of the United States and in the trade centers across the sea. The club took a very prominent part in the preparations for the national foreign trade convention held in San Francisco in 1920.

The fifth anniversary, May 9, 1922, will be celebrated by the Foreign Trade Club of San Francisco with a unique function in the great banquet hall of the Commercial Club. The program on this occasion will include an address by Major William T. Morgan, an exhibit of the products of the countries of the world entering into San Francisco's import and export business, and a recognition of the flags and consuls in the forty different countries, interspersed with vocal and orchestral music appropriate to such an occasion.

## Telephoning a Ship at Sea

THOMAS H. ROSSBOTTOM, general manager of the United States Lines, is the recipient of hundreds of telegrams and letters of congratulation on account of his pioneer work in using the telephone-wireless in communicating with the big liner America a short time ago.

Maritime history was made by Mr. Rossbottom in his use of the telephone-wireless in receiving the report of his captain and in transmitting orders to the ship. This is the first time in history that the commander of a merchant vessel has made his report to the operator by telephone-wireless, and that orders from the operator were transmitted to the ship by the same medium. The occasion for this was the arrival of the steamship America on March 6.

While the America was still considerable distance from Ambrose Channel lightship, Mr. Rossbottom was connected up through the powerful station at Deal Beach, New Jersey. Within ten minutes after the call was made, Captain William Rind of the America was on the telephone. After an exchange of greetings, Captain Rind told Mr. Rossbottom the speed he was making, and the time he expected to reach quarantine. Mr. Rossbottom in reply gave his instructions to Captain Rind concerning the special arrangements which had been made with the public health officials at the quarantine station for the passing of the vessel beyond the sunset hour.

# COMPLETE TABLES OF E. F. C. CONSTRUCTION

## What Each Yard Contributed to Greatest Shipbuilding Program Disclosed by Official Statistics

## Completed Program of Steel Ship Construction

### NORTH ATLANTIC DISTRICT

| BUILDER and LOCATION | REQUISITION SHIPS | | | | | | CONTRACT SHIPS | | | | | | TOTAL | | Date of Del. of Last Ship of Contracts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cargo | | Tanker | | Refrigerator | | Cargo | | Tanker | | O—Tug | | | | |
| | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | |
| Atlantic Corp., Portsmouth, N. H. | .. | ........ | .. | ........ | .. | ........ | 10 | 88,000 | .. | ........ | .. | ........ | 10 | 88,000 | 10-28-20 |
| Beth. S. B. Corp., Fore River, Quincy, Mass. | 7 | 79,650 | 2 | 18,200 | .. | ........ | .. | ........ | 6 | 54,600 | .. | ........ | 15 | 152,450 | 12-22-19 |
| Beth. S. B. Corp., Moore Plant, Elizabethport, N. J. | 2 | 7,000 | 1 | 4,800 | .. | ........ | 2 | 10,200 | .. | ........ | 20 | ........ | 25 | 22,000 | 6-29-20 |
| Downey S. B. Co., Arlington, S. I., N. Y. | .. | ........ | .. | ........ | .. | ........ | 10 | 75,000 | .. | ........ | .. | ........ | 10 | 75,000 | 11-26-19 |
| Federal S. B. Co., Kearney, N. J. | .. | ........ | .. | ........ | .. | ........ | 30 | 288,000 | .. | ........ | .. | ........ | 30 | 288,000 | 1- 8-20 |
| Groton Iron Works, Groton, Conn. | .. | ........ | .. | ........ | .. | ........ | 9 | 81,000 | .. | ........ | .. | ........ | 9 | 81,000 | 12-13-20 |
| Newburgh Shipyards, Newburgh, N. Y. | .. | ........ | .. | ........ | .. | ........ | 12 | 108,000 | .. | ........ | .. | ........ | 12 | 108,000 | 12-21-20 |
| Providence Eng. Corp., Providence, R. I. | .. | ........ | .. | ........ | .. | ........ | .. | ........ | .. | ........ | 10 | ........ | 10 | ........ | 10-15-20 |
| Standard S. B. Co., Shooters Island, N. Y. | 10 | 73,000 | .. | ........ | 3 | 21,900 | 10 | 74,330 | .. | ........ | .. | ........ | 23 | 169,230 | 6-25-20 |
| Staten Island S. B. Co., Mariners Harbor, N. Y. | 5 | 17,500 | .. | ........ | .. | ........ | .. | ........ | .. | ........ | .. | ........ | 5 | 17,500 | 6-17-19 |
| Texas S. S. Co., Bath, Maine | 4 | 39,000 | 4 | 38,000 | .. | ........ | .. | ........ | .. | ........ | .. | ........ | 8 | 77,000 | 11-10-19 |
| TOTAL | 28 | 216,150 | 7 | 61,000 | 3 | 21,900 | 83 | 724,530 | 6 | 54,600 | 30 | ........ | 157 | 1,078,180 | |

### AGENCY YARDS

| BUILDER and LOCATION | REQUISITION SHIPS | | | | | | CONTRACT SHIPS | | | | | | TOTAL | | Date of Del. of Last Ship of Contracts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cargo | | Tanker | | Refrigerator | | Cargo | | Tanker | | Transport | | | | |
| | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | |
| Merchant S. B. Corp., Bristol, Pa. | .. | ........ | .. | ........ | .. | ........ | 40 | 360,000 | .. | ........ | .. | ........ | 40 | 360,000 | 2-28-21 |
| Am. Int. S. B. Corp., Hog Island, Pa. | .. | ........ | .. | ........ | .. | ........ | 110 | 825,000 | .. | ........ | 12 | 96,000 | 122 | 921,000 | 1-29-21 |
| Submarine Boat Corp., Newark, N. J. | .. | ........ | .. | ........ | .. | ........ | 118 | 598,850 | .. | ........ | .. | ........ | 118 | 598,850 | 6-11-20 |
| TOTAL | .. | ........ | .. | ........ | .. | ........ | 268 | 1,783,850 | .. | ........ | 12 | 96,000 | 280 | 1,879,850 | |

### DELAWARE RIVER DISTRICT

| BUILDER and LOCATION | REQUISITION SHIPS | | | | | | | | | | CONTRACT SHIPS | | | | | | TOTAL | | Date of Del. of Last Ship of Contracts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cargo | | Tanker | | Refrigerator | | Transport | | Pass. & Cargo | | Cargo | | Tanker | | Pass. & Cargo | | | | |
| | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | |
| Bethelem S. B. Corp.—(HarlanPl.) Wilmington, Del. | 6 | 25,000 | 4 | 36,110 | .. | ....... | .. | ....... | .. | ....... | 8 | 47,700 | 6 | 45,000 | .. | ....... | 24 | 153,810 | 12-31-20 |
| Wm. Cramp & Sons, S.& E. Bldg. Co., Philadelphia, Pa. | 3 | 28,300 | .. | ....... | .. | ....... | 4 | 23,825 | 2 | 9,972 | .. | ....... | 4 | 40,000 | .. | ....... | 13 | 102,097 | 2-16-21 |
| Merchant S. B. Corp.—Chester, Pa. | 22 | 196,179 | 6 | 54,000 | .. | ....... | .. | ....... | .. | ....... | .. | ....... | .. | ....... | .. | ....... | 28 | 250,179 | 12- 3-20 |
| New York S. B. Corp.—Camden, N. J. | 14 | 109,900 | 5 | 53,520 | .. | ....... | 2 | 10,650 | .. | ....... | 1 | 11,925 | .. | ....... | 16 | 208,000 | 38 | 393,995 | 2- 8-22 |
| Pusey & Jones (N. J. Yard)—Gloucester, N. J. | 3 | 15,000 | .. | ....... | .. | ....... | .. | ....... | .. | ....... | .. | ....... | .. | ....... | .. | ....... | 3 | 15,000 | 6- 9-19 |
| Pusey & Jones (Pa. Yard)—Gloucester, N. J. | 11 | 137,500 | 6 | 42,000 | .. | ....... | .. | ....... | .. | ....... | .. | ....... | .. | ....... | .. | ....... | 17 | 179,500 | 6-23-21 |
| Pusey & Jones (Wilm. Yard)—Wilmington, N. J. | 14 | 58,400 | .. | ....... | .. | ....... | .. | ....... | .. | ....... | .. | ....... | .. | ....... | .. | ....... | 14 | 58,400 | 7-30-20 |
| Sun S. B. Co.—Chester, Pa. | 3 | 35,700 | 6 | 63,000 | 2 | 23,200 | 3 | 37,500 | .. | ....... | 4 | 40,000 | .. | ....... | .. | ....... | 18 | 199.400 | 3-22-20 |
| TOTAL | 76 | 605,979 | 27 | 248,630 | 2 | 23,200 | 9 | 71,975 | 2 | 9,972 | 13 | 99,625 | 10 | 85,000 | 16 | 208,000 | 155 | 1,352,381 | ....... |

### MIDDLE ATLANTIC DISTRICT

| BUILDER and LOCATION | REQUISITION SHIPS | | | | | | CONTRACT SHIPS | | | | | | TOTAL | | Date of Del. of Last Ship of Contracts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cargo | | Tanker | | Refrigerator | | Cargo | | Tanker | | Pass. & Cargo | | | | |
| | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | |
| Baltimore D. D. & S. B. Co., Baltimore, Md. | 5 | 31,000 | 1 | 5,000 | 5 | 31,000 | 8 | 70,400 | 14 | 126,600 | .. | ........ | 33 | 264,000 | 8-19-21 |
| Bethelehem S. B. Corp., Sparrows Pt., Md. | 6 | 45,300 | 1 | 11,350 | 1 | 10,100 | 4 | 29,600 | 10 | 101,000 | 5 | 65,000 | 27 | 262,350 | † |
| Geo. A. Fuller Co., Wilmington, N. C. | .. | ........ | .. | ........ | .. | ........ | 8 | 76,800 | .. | ........ | .. | ........ | 8 | 76,800 | 11-10-20 |
| Newport News S. B. & D. D. Co., Newport News, Va. | 5 | 35,460 | 4 | 52,450 | .. | ........ | .. | ........ | 8 | 91,000 | 2 | 26,000 | 19 | 204,910 | 5-12-21 |
| Virginia S. B. Co., Alexandria, Va. | .. | ........ | .. | ........ | .. | ........ | 10 | 94,000 | .. | ........ | .. | ........ | 10 | 94,000 | *10-30-20 |
| TOTAL | 16 | 111,760 | 6 | 68,800 | 6 | 41,100 | 30 | 270,800 | 32 | 318,600 | 7 | 91,000 | 97 | 902,060 | ........ |

*Yard suspended operations—Date of last ship uncertain.

† Delivery date of final ship is estimated as 5-8-22.

### GULF DISTRICT

| BUILDER and LOCATION | REQUISITION SHIPS | | | | | | CONTRACT SHIPS | | | | | | TOTAL | | Date of Del. of Last Ship of Contracts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cargo | | Tanker | | Refrigerator | | Cargo | | Barge | | H—Tug | | | | |
| | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | |
| Alabama D. D. & S. B. Co., Mobile, Ala. | .. | ........ | .. | ........ | .. | ........ | .. | ........ | 2 | 15,000 | .. | ........ | 2 | 15,000 | 7-10-20 |
| Oscar Daniels Co., Tampa, Fla. | .. | ........ | .. | ........ | .. | ........ | 10 | 95,000 | .. | ........ | .. | ........ | 10 | 95,000 | 5-31-21 |
| Doullut & Williams S. B. Co., New Orleans, La. | .. | ........ | .. | ........ | .. | ........ | 8 | 76,800 | .. | ........ | .. | ........ | 8 | 76,800 | 6-14,21 |
| Johnson Iron Works, New Orleans, La. | .. | ........ | .. | ........ | .. | ........ | .. | ........ | .. | ........ | 6 | ........ | 6 | ........ | 5- 1-20 |
| Merrill-Stevens S. B. Co., Jacksonville, Fla. | 1 | 6,000 | .. | ........ | .. | ........ | 4 | 24,000 | .. | ........ | .. | ........ | 5 | 30,000 | 5-29-20 |
| Mobile S. B. Co., Mobile, Ala. | .. | ........ | .. | ........ | .. | ........ | 8 | 40,000 | .. | | .. | ........ | 8 | 40,000 | 10-23-20 |
| Nashville Bridge Co., Nashville, Tenn. | .. | ........ | .. | ........ | .. | ........ | .. | ........ | 4 | 7,200 | .. | ........ | 4 | 7,200 | 9-13-20 |
| Pensacola S. B. Co., Pensacola, Fla. | .. | ........ | .. | ........ | .. | ........ | 10 | 90,000 | .. | ........ | .. | ........ | 10 | 90,000 | 10-15-20 |
| Tampa S. B. Co., Tampa, Fla. | 2 | 7,000 | .. | ........ | .. | ........ | .. | ........ | .. | ........ | .. | ........ | 2 | 7,000 | 3- 3-19 |
| TOTAL | 3 | 13,000 | .. | ........ | .. | ........ | 40 | 325,800 | 6 | 22,200 | 6 | ........ | 55 | 361,000 | ........ |

### PACIFIC DISTRICT (SOUTHERN SECTION)

| BUILDER and LOCATION | REQUISITION SHIPS | | | | CONTRACT SHIPS | | | | | | | | TOTAL | | Date of Del. of Last Ship of Contracts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cargo | | Tanker | | Cargo | | Tanker | | Transport | | Refrigerator | | | | |
| | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | |
| Bethlehem S. B. Corp., Alameda, Calif. | 9 | 100,400 | 10 | 113,600 | 8 | 94,500 | 18 | 181,800 | 1 | 11,800 | .. | ........ | 46 | 502,100 | 7-22-21 |
| Hanlon D. D. & S. B. Co., Oakland, Calif. | 2 | 11,000 | .. | ........ | 9 | 48,150 | .. | ........ | .. | ........ | .. | ........ | 11 | 59,150 | 2- 5-21 |
| Long Beach S. B. Co., Long Beach, Calif. | 2 | 6,000 | .. | ........ | 12 | 91,600 | .. | ........ | .. | ........ | .. | ........ | 14 | 97,600 | 12-18-20 |
| Los Angeles S. B. & D. D. Co., Los Angeles, Calif. | .. | ........ | .. | ........ | 35 | 319,000 | .. | ........ | .. | ........ | .. | ........ | 35 | 319,000 | 11-14-21 |
| Moore S. B. Co., Oakland, Calif. | 7 | 63,500 | .. | ........ | 18 | 169,200 | 12 | 120,000 | .. | ........ | 8 | 75,200 | 45 | 427,900 | 8-19-21 |
| Pacific Coast S. B. Co., Bay Point, Calif. | .. | ........ | .. | ........ | 10 | 94,000 | .. | ........ | .. | ........ | .. | ........ | 10 | 94,000 | 6- 7-21 |
| Southwestern S. B. Co., San Pedro, Calif. | .. | ........ | .. | ........ | 18 | 158,400 | .. | ........ | .. | ........ | .. | ........ | 18 | 158,400 | 8-23-20 |
| Union Construction Co., Oakland, Calif. | .. | ........ | .. | ........ | 10 | 94,000 | .. | ........ | .. | ........ | .. | ........ | 10 | 94,000 | 10- 1-20 |
| Western Pipe & Steel Co., San Francisco, Calif. | .. | ........ | .. | ........ | 18 | 158,400 | .. | ........ | .. | ........ | .. | ........ | 18 | 158,400 | 10-26-20 |
| TOTAL | 20 | 180,900 | 10 | 113,600 | 138 | 1,227,250 | 30 | 301,800 | 1 | 11,800 | 8 | 75,200 | 207 | 1,910,550 | ........ |

### PACIFIC DISTRICT (NORTHERN SECTION)

| BUILDER AND LOCATION | REQUISITION SHIPS | | | | | | CONTRACT SHIPS | | | | TOTAL | | Date of Del. of Last Ship of Contracts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cargo | | Tanker | | Refrigerator | | Cargo | | Tanker | | | | |
| | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | |
| Albina Eng. & Mach. Works, Portland, Ore. | 6 | 21,800 | .. | ........ | .. | ........ | 11 | 40,700 | .. | ........ | 17 | 62,500 | 8-19-19 |
| Ames S. B. & D. D. Co., Seattle, Wash. | 11 | 95,900 | 2 | 18,000 | .. | ........ | 12 | 105,600 | .. | ........ | 25 | 219,500 | 3-15-20 |
| Columbia River S. B. Co., Portland, Ore | 4 | 35,200 | .. | ........ | .. | ........ | 26 | 228,800 | .. | ........ | 30 | 264,000 | 1- 5-20 |
| J. F. Duthie & Co., Seattle, Wash | 12 | 105,600 | .. | ........ | .. | ........ | 12 | 105,600 | .. | ........ | 24 | 211,200 | 5-24-20 |
| Northwest Steel Co., Portland, Ore. | 15 | 132,000 | .. | ........ | .. | ........ | 20 | 176,000 | 7 | 84,000 | 42 | 392,000 | 6-10-21 |
| Seattle Constr. & D. D. Co., Seattle, Wash. | 5 | 40,500 | .. | ........ | .. | ........ | (Todd) 10 | 75,000 | .. | ........ | 15 | 115.500 | 1-31-20 |
| Seattle No. Pac. S. B. Co., Seattle, Wash. | .. | ........ | .. | ........ | .. | ........ | 10 | 94,000 | .. | ........ | 10 | 94,000 | 12-30-19 |
| Skinner & Eddy Corp., Seattle, Wash. | 7 | 61,600 | 1 | 9,000 | .. | ........ | 57 | 526,600 | .. | ........ | 65 | 597,200 | 12-24 19 |
| G. M. Standifer Const. Corp., Vancouver, Wash. | .. | ........ | .. | ........ | .. | ........ | 15 | 141,750 | .. | ........ | 15 | 141,750 | 8-23-20 |
| Todd D. D. & S. B. Corp., Tacoma, Wash. | 7 | 52,500 | .. | ........ | .. | ........ | 10 | 75,000 | .. | ........ | 17 | 127,500 | 7-22-20 |
| TOTAL | 67 | 545,100 | 3 | 27,000 | .. | ........ | 183 | 1,569,050 | 7 | 84,000 | 260 | 2,225,150 | ........ |

### GREAT LAKES DISTRICT

| BUILDER and LOCATION | REQUISITION SHIPS | | | | | | CONTRACT SHIPS | | | | | | TOTAL | | Date of Del. of Last Ship of Contracts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cargo | | Tanker | | Refrigerator | | Cargo | | O—Tug | | H—Tug | | | | |
| | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | |
| American S. B. Co., Buffalo, N. Y. | .. | ........ | .. | ........ | .. | ........ | 9 | 34,400 | .. | ........ | .. | ........ | 9 | 34,400 | 9-27-19 |
| American S. B. Co., Chicago, Ill. | 4 | 12,400 | .. | ........ | .. | ........ | 23 | 89,700 | .. | ........ | .. | ........ | 27 | 102,100 | 4-30-20 |
| American S. B. Co., Cleveland, Ohio | 4 | 12,400 | .. | ........ | .. | ........ | 25 | 97,150 | .. | ........ | .. | ........ | 29 | 109,550 | 11-19-19 |
| American S. B. Co., Detroit, Mich. | 12 | 39,200 | .. | ........ | .. | ........ | 59 | 234,450 | .. | ........ | .. | ........ | 71 | 273,650 | 4-17-20 |
| American S. B. Co., Lorain, Ohio | 9 | 27,900 | .. | ........ | .. | ........ | 42 | 167,300 | .. | ........ | .. | ........ | 51 | 195,200 | 4-17-20 |
| American S. B. Co., Superior, Wis. | 4 | 12,400 | .. | ........ | .. | ........ | 18 | 70,800 | .. | ........ | .. | ........ | 22 | 83,200 | 10-17-19 |
| Globe S. B. Co., Superior, Wis. | 4 | 14,000 | .. | ........ | .. | ........ | 15 | 57,450 | .. | ........ | .. | ........ | 19 | 71,450 | 6-29-20 |
| Gt. Lakes Eng. Works, Ashtabula, Ohio | 10 | 34,400 | .. | ........ | .. | ........ | 16 | 64,450 | .. | ........ | .. | ........ | 26 | 98,850 | 3-16-20 |
| Gt. Lakes Eng. Works, Ecorse, Mich. | 20 | 71,900 | .. | ........ | .. | ........ | 38 | 153,650 | .. | ........ | .. | ........ | 58 | 225,550 | 3- 8-20 |
| Manitowoc S. B. Co., Manitowoc, Wis. | 13 | 45,000 | .. | ........ | .. | ........ | 22 | 83,250 | .. | ........ | .. | ........ | 35 | 128,250 | 8-19-20 |
| McDougall-Duluth Co., Duluth, Minn. | 9 | 28,300 | .. | ........ | .. | ........ | 25 | 95,750 | .. | ........ | .. | ........ | 34 | 124,050 | 5- 8-20 |
| Northwest Eng. Works, Green Bay, Wis. | .. | ........ | .. | ........ | .. | ........ | .. | ........ | 6 | ........ | 2 | ........ | 8 | ........ | 4-22-20 |
| Saginaw S. B. Co., Saginaw, Mich. | .. | ........ | .. | ........ | .. | ........ | 18 | 66,300 | .. | ........ | .. | ........ | 18 | 66,300 | 4-21-21 |
| Toledo S. B. Co., Toledo, Ohio | 10 | 29,300 | .. | ........ | .. | ........ | 21 | 80,650 | .. | ........ | .. | ........ | 31 | 109,950 | 6-19-20 |
| Whitney Bros. Co., Superior, Wis. | .. | ........ | .. | ........ | .. | ........ | .. | ........ | 10 | ........ | .. | ........ | 10 | ........ | 12-10-19 |
| TOTAL | 99 | 327,200 | .. | ........ | .. | ........ | 331 | 1,295,300 | 16 | ........ | 2 | ........ | 448 | 1,622,500 | ........ |

### JAPAN AND CHINA

| BUILDER and LOCATION | REQUISITION SHIPS | | | | | | CONTRACT SHIPS | | | | | | TOTAL | | Date of Del. of Last Ship of Contracts |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cargo | | Tanker | | Refrigerator | | Cargo | | Tanker | | Transport | | | | |
| | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | |
| Asano Zosensho, Tsurumi, Japan | .. | ........ | .. | ........ | .. | ........ | 2 | 25,200 | .. | ........ | .. | ........ | 2 | 25,200 | 2-14-20 |
| Fuginagata Zosensho, Osaka, Japan | .. | ........ | .. | ........ | .. | ........ | 1 | 6,300 | .. | ........ | .. | ........ | 1 | 6,300 | 8- 9-20 |
| Harima Zosensho, Aioi, Japan | .. | ........ | .. | ........ | .. | ........ | 2 | 15,500 | .. | ........ | .. | ........ | 2 | 15,500 | 7-23-20 |
| Ishikawajima Zosensho, Tokyo, Japan | .. | ........ | .. | ........ | .. | ........ | 2 | 10,000 | .. | ........ | .. | ........ | 2 | 10,000 | 5- 1-20 |
| Kawasaki, Kobe, Japan | .. | ........ | .. | ........ | .. | ........ | 5 | 45,000 | .. | ........ | .. | ........ | 5 | 45,000 | 4-23-20 |
| Mitsui Bussan, Okayama, Japan | .. | ........ | .. | ........ | .. | ........ | 2 | 18,000 | .. | ........ | .. | ........ | 2 | 18,000 | 7-16-20 |
| Mitsubishi Zosen Kaisha, Nagasaki, Japan | .. | ........ | .. | ........ | .. | ........ | 2 | 16,720 | .. | ........ | .. | ........ | 2 | 16,720 | 3-19-20 |
| Nitta Kisen Kabushiki, Osaka, Japan | .. | ........ | .. | ........ | .. | ........ | 1 | 5,500 | .. | ........ | .. | ........ | 1 | 5,500 | 8- 6-20 |
| Osaka Tekko Sho, Osaka, Japan | .. | ........ | .. | ........ | .. | ........ | 4 | 40,000 | .. | ........ | .. | ........ | 4 | 40,000 | 5-26-20 |
| Uchida Zosensho, Kanagawa, Japan | .. | ........ | .. | ........ | .. | ........ | 2 | 16,720 | .. | ........ | .. | ........ | 2 | 16,720 | 5-18-20 |
| Uraga Senkyo, Uraga, Japan | .. | ........ | .. | ........ | .. | ........ | 4 | 25,450 | .. | ........ | .. | ........ | 4 | 25,450 | 10- 2-20 |
| Yokohama Senkyo, Yokohama, Japan | .. | ........ | .. | ........ | .. | ........ | 3 | 18,900 | .. | ........ | .. | ........ | 3 | 18,900 | 4-16-20 |
| Kiangnan Dock & Eng. Co., Shanghai, China | .. | ........ | .. | ........ | .. | ........ | 4 | 40,000 | .. | ........ | .. | ........ | 4 | 40,000 | 12-21-21 |
| TOTAL | .. | ........ | .. | ........ | .. | ........ | 34 | 283,290 | .. | ........ | .. | ........ | 34 | 283,290 | ........ |

### TOTAL BY DISTRICTS

| DISTRICT | REQUISITION SHIPS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Cargo | | Tanker | | Refrigerator | | Transport | | Pass. & Cargo | |
| | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. |
| North Atlantic | 28 | 216,150 | 7 | 61,000 | 3 | 21,900 | .. | ...... | .. | ...... |
| Agency Yards | .. | ........ | .. | ........ | .. | ...... | .. | ...... | .. | ...... |
| Delaware River | 76 | 605,979 | 27 | 248,630 | 2 | 23,200 | 9 | 71,975 | 2 | 9,972 |
| Middle Atlantic | 16 | 111,760 | 6 | 68,800 | 6 | 41,100 | .. | ...... | .. | ...... |
| Gulf District | 3 | 13,000 | .. | ........ | .. | ...... | .. | ...... | .. | ...... |
| Pacific (Southern Section) | 20 | 180,900 | 10 | 113,600 | .. | ...... | .. | ...... | .. | ...... |
| Pacific (Northern Section) | 67 | 545,100 | 3 | 27,000 | .. | ...... | .. | ...... | .. | ...... |
| Great Lakes | 99 | 327,200 | .. | ........ | .. | ...... | .. | ...... | .. | ...... |
| Japan & China | .. | ........ | .. | ........ | .. | ...... | .. | ...... | .. | ...... |
| GRAND TOTAL (Ships) | 309 | ........ | 53 | ........ | 11 | ...... | 9 | ...... | 2 | ...... |
| GRAND TOTAL (D. W. T.) | ... | 2,000,089 | .. | 519,030 | .. | 86,200 | .. | 71,975 | .. | 9,972 |

NOTE:—Released vessels are not included.

#### CONTRACT SHIPS

| Cargo | | Tanker | | Transport | | Refrigerator | | Pass. & Cargo | | Barge | | O—Tug | | H—Tug | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. |
| 83 | 724,530 | 6 | 54,600 | .. | ....... | .. | ...... | .. | ....... | .. | ...... | 30 | ...... | .. | ...... | 157 | 1,078,180 |
| 268 | 1,783,850 | .. | ....... | 12 | 96,000 | .. | ...... | .. | ....... | .. | ...... | .. | ...... | .. | ...... | 280 | 1,879,850 |
| 13 | 99,625 | 10 | 85,000 | .. | ....... | .. | ...... | 16 | 208,000 | .. | ...... | .. | ...... | .. | ...... | 155 | 1,352,381 |
| 30 | 270,800 | 32 | 318,600 | .. | ....... | .. | ...... | 7 | 91,000 | .. | ...... | .. | ...... | .. | ...... | 97 | 902,060 |
| 40 | 325,800 | .. | ....... | .. | ....... | .. | ...... | .. | ....... | 6 | 22,200 | .. | ...... | 6 | ...... | 55 | 361,000 |
| 138 | 1,227,250 | 30 | 301,800 | 1 | 11,800 | 8 | 75,200 | .. | ....... | .. | ...... | .. | ...... | .. | ...... | 207 | 1,910,550 |
| 183 | 1,569,050 | 7 | 84,000 | .. | ....... | .. | ...... | .. | ....... | .. | ...... | .. | ...... | .. | ...... | 260 | 2,225,150 |
| 331 | 1,295,300 | .. | ....... | .. | ....... | .. | ...... | .. | ....... | .. | ...... | 16 | ...... | 2 | ...... | 448 | 1,622,500 |
| 34 | 283,290 | .. | ....... | .. | ....... | .. | ...... | .. | ....... | .. | ...... | .. | ...... | .. | ...... | 34 | 283,290 |
| 1120 | ....... | 85 | ....... | 13 | ....... | 8 | ...... | 23 | ....... | 6 | ...... | 46 | ...... | 8 | ...... | 1693 | ......... |
| .... | 7,579,495 | .. | 844,000 | .. | 107,800 | .. | 75,200 | .. | 299,000 | .. | 22,200 | .. | ...... | .. | ...... | ... | 11,614,961 |

## Completed Program of Wood Ship Construction

### NORTH ATLANTIC DISTRICT

| BUILDER AND LOCATION | Cargo | | Finished Hulls | | Barge | | Ocean Tugs | | Harbor Tugs | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. |
| Cumberland S. B. Co., So. Portland, Maine | 4 | 14,000 | 3 | 11,550 | .. | ........ | .. | ...... | .. | ........ | 7 | 25,550 |
| Freeport S. B. Co., So. Freeport, Maine | 1 | 3,500 | 1 | 3,850 | .. | ........ | .. | ........ | .. | ........ | 2 | 7,350 |
| George A. Gilchrest, Thomaston, Maine | 1 | 3,500 | .. | ........ | .. | ........ | .. | ........ | .. | ........ | 1 | 3,500 |
| Kelley Spear Co., Bath, Maine | 1 | 3,500 | .. | ........ | 2 | 5,000 | .. | ........ | .. | ........ | 3 | 8,500 |
| Russell S. B. Co., Portland, Maine | 4 | 14,000 | 2 | 7,700 | .. | ........ | .. | ........ | .. | ........ | 6 | 21,700 |
| Sandy Point S. B. Corp., Sandy Point, Maine | .. | ........ | 2 | 7,700 | 2 | 5,000 | .. | ........ | .. | ........ | 4 | 12,700 |
| L. H. Shattock, Inc., Newington, N. H. | 8 | 28,000 | 2 | 7,700 | 5 | 18,750 | .. | ........ | .. | ........ | 15 | 54,450 |
| Francis Cobb S. B. Co., Rockland, Maine | .. | ........ | .. | ........ | 1 | 2,500 | .. | ........ | .. | ........ | 1 | 2,500 |
| Crosby Navigation Co., Richmond, Maine | .. | ........ | .. | ........ | 2 | 6,000 | .. | ........ | .. | ........ | 2 | 6,000 |
| Richard T. Green Co., Chelsea, Mass. | .. | ........ | .. | ........ | 1 | 2,500 | .. | ........ | .. | ........ | 1 | 2,500 |
| Machias Ship Con. Co., Machias, Maine | .. | ........ | .. | ........ | 3 | 7,500 | .. | ........ | .. | ........ | 3 | 7,500 |
| Crowinshield S. B. Co., Fall River, Mass. | .. | ........ | .. | ........ | .. | ........ | 5 | "A" | .. | ........ | 5 | "A" |
| Foundation Co., Newark Meadows, N. J. | 9 | 31,500 | 1 | 3,850 | .. | ........ | .. | ........ | .. | ........ | 10 | 35,350 |
| Gildersleeve Ship Con. Co., Gildersleeve, Conn. | 1 | 3,500 | 1 | 3,850 | .. | ........ | .. | ........ | .. | ........ | 2 | 7,350 |
| Groton Iron Works, Noank, Conn. | 3 | 10,500 | 2 | 7,700 | .. | ........ | .. | ........ | .. | ........ | 5 | 18,200 |
| Housatonic S. B. Co., Stratford, Conn. | 1 | 3,500 | 4 | 15,400 | 1 | 3,750 | .. | ........ | .. | ........ | 6 | 22,650 |
| Johnson S. Y. Corp, Staten Island, N. Y. | 1 | 3,500 | 1 | 3,850 | 2 | 6,050 | .. | ........ | .. | ........ | 4 | 13,400 |
| Kingston S. B. Corp., Kingston, N. Y. | 1 | 3,500 | 2 | 7,700 | .. | ........ | .. | ........ | .. | ........ | 3 | 11,200 |
| Ship Const. & Trading Co., Inc., Stonington, Conn. | .. | ........ | 1 | 3,850 | 1 | 3,750 | .. | ........ | .. | ........ | 2 | 7,600 |
| Traylor S. B. Co., Cornwells, Pa. | 8 | 28,000 | .. | ........ | .. | ........ | .. | ........ | .. | ........ | 8 | 28,000 |
| Continental S. B. Corp., Yonkers, N. Y. | .. | ........ | .. | ........ | 1 | 1,600 | .. | ........ | .. | ........ | 1 | 1,600 |
| A. C. Brown & Sons, Staten Island, N. Y. | .. | ........ | .. | ........ | .. | ........ | .. | ........ | 5 | "A" | 5 | "A" |
| Consolidated S. B. Corp., Morris Heights, N. Y. | .. | ........ | .. | ........ | .. | ........ | .. | ........ | 4 | "A" | 4 | "A" |
| International S. B. & M. E. Corp., Nyack, N. Y. | .. | ........ | .. | ........ | .. | ........ | .. | ........ | 5 | "A" | 5 | "A" |
| John H. Mathis Co., Camden, N. J. | .. | ........ | .. | ........ | .. | ........ | .. | ........ | 3 | "A" | 3 | "A" |
| John W. Sullivan Co., New York, N. Y. | .. | ........ | .. | ........ | .. | ........ | .. | ........ | 2 | "A" | 2 | "A" |
| TOTAL | 43 | 150,500 | 22 | 84,700 | 21 | 62,400 | 5 | "A" | 19 | "A" | 110 | 297,600 |

### MIDDLE ATLANTIC DISTRICT

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maryland S. B. Co., Baltimore, Md. | 2 | 7,000 | .. | ........ | 2 | 7,500 | .. | ........ | .. | ........ | 4 | 14,500 |
| Missouri Valley B. & I. Works, Quantico, Va. | .. | ........ | .. | ........ | 2 | 7,100 | .. | ........ | .. | ........ | 2 | 7,100 |
| North Carolina S. B. Co., Inc., Morehead City, N. C. | .. | ........ | 2 | 7,700 | .. | ........ | .. | ........ | .. | ........ | 2 | 7,700 |
| Henry Smith & Sons Co., Baltimore, Md. | .. | ........ | 2 | 7,700 | .. | ........ | .. | ........ | .. | ........ | 2 | 7,700 |
| C. H. Tenney & Co., Hampton, Va. | .. | ........ | 2 | 7,700 | .. | ........ | .. | ........ | .. | ........ | 2 | 7,700 |
| York River S. B. Corp., West Point, Va. | .. | ........ | 1 | 3,850 | 1 | 3,550 | .. | ........ | .. | ........ | 2 | 7,400 |

### MIDDLE ATLANTIC DISTRICT (Continued)

| BUILDER AND LOCATION | Cargo | | Finished Hulls | | Barge | | Ocean Tugs | | Harbor Tugs | | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. |
| Coastwise S. B. Co., Baltimore, Md. | | | | | 3 | 7,500 | | | | | 3 | 7,500 |
| H. E. Crook Co., Inc., Baltimore, Md. | | | | | 2 | 5,000 | | | | | 2 | 5,000 |
| Whitehaven S. B. Co., White Haven, Md. | | | | | 2 | 5,000 | | | | | 2 | 5,000 |
| Chance Marine Con. Co., Annapolis, Md. | | | | | | | | | 3 | "A" | 3 | "A" |
| M. M. Davis & Son, Inc., Solomons, Md. | | | | | | | 5 | "A" | | | 5 | "A" |
| Eastern Shore S. B. Corp., Sharptown, Md. | | | | | | | | | 6 | HullsOnly | 6 | "A" |
| Vinyard S. B. Co., Milford, Del. | | | | | | | | | 1 | "A" | 1 | "A" |
| TOTALS | 2 | 7,000 | 7 | 26,950 | 12 | 35,650 | 5 | "A" | 10 | "A" | 36 | 69,600 |

NOTE "A"—No Deadweight on Tugs.

### GULF DISTRICT

| BUILDER AND LOCATION | Cargo | | Tanker | | Finished Hull | | Barge | | Sailing Vessel | | O-Tug | | H-Tug | | TOTALS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. |
| American S. B. Co., Brunswick, Ga. | 2 | 7,000 | | | 2 | 7,700 | 1 | 3,750 | | | | | | | 5 | 18,450 |
| Morey & Thomas, Jacksonville, Fla. | 4 | 14,000 | | | 1 | 3,850 | | | | | | | | | 5 | 17,850 |
| J. M. Murdock, Jacksonville, Fla. | 3 | 10,500 | | | 1 | 3,850 | | | | | | | | | 4 | 14,350 |
| St. Johns River S. Y. Co., Jacksonville, Fla. | 4 | 14,000 | | | 1 | 3,850 | 3 | 7,500 | | | | | | | 8 | 25,350 |
| Tampa Dock Co., Tampa, Fla. | 4 | 14,000 | | | | | 1 | 3,750 | | | | | | | 5 | 17,750 |
| U. S. Maritime Corp., Brunswick, Ga. | 2 | 7,000 | | | 1 | 3,850 | | | | | | | | | 3 | 10,850 |
| Gibbs Gas Eng. Co., Jacksonville, Fla. | | | | | | | | | | | | | 4 | "A" | 4 | "A" |
| Southland S. S. Co., Savannah, Ga. | | | | | | | | | | | 2 | "A" | | | 2 | "A" |
| Alabama D. D. & S. B. Co., Mobile, Ala. | 2 | 7,000 | | | | | | | | | | | | | 2 | 7,000 |
| Dantzler S. B. & D. D. Co., Moss Point, Miss. | 2 | 7,000 | | | 2 | 7,700 | | | | | | | | | 4 | 14,700 |
| Dierks-Blodgett S. B. Co., Pascagoula, Miss. | 5 | 17,500 | | | | | | | | | | | | | 5 | 17,500 |
| Hodge Ship Co., Inc., Moss Point, Miss. | 3 | 10,500 | | | | | | | | | | | | | 3 | 10,500 |
| Jahncke S. B. Co., Madisonville, La. | 4 | 14,000 | | | 1 | 3,850 | | | | | | | | | 5 | 17,850 |
| American Lumber Co., Millville, Fla. | | | | | | | 1 | 2,500 | | | | | | | 1 | 2,500 |
| Beaumont S. B. & D. D. Co., Beaumont, Texas | 4 | 14,000 | | | | | 1 | 3,750 | 2 | 4,000 | | | | | 7 | 21,750 |
| Heldenfels Bros., Rockport, Tex. | | | | | 2 | 7,700 | 2 | 7,100 | | | | | | | 4 | 14,800 |
| Lone Star S. B. Co., Beaumont, Texas | 4 | 14,000 | | | | | 2 | 7,300 | | | | | | | 6 | 21,300 |
| McBride & Law, Beaumont, Texas | 2 | 7,000 | | | | | 1 | 3,750 | | | | | | | 3 | 10,750 |
| J. N. McCammon, Beaumont, Texas | | | | | | | 2 | 7,500 | | | | | | | 2 | 7,500 |
| Midland Bridge Co., Houston, Texas | 1 | 3,500 | | | 5 | 19,250 | 4 | 12,100 | | | | | | | 10 | 34,850 |
| National S. B. Co., Orange, Texas | 11 | 51,700 | 1 | 4,700 | | | | | | | | | | | 12 | 56,400 |
| Southern D. D. & S. B. Co., Orange, Texas | | | | | 3 | 11,550 | 3 | 10,650 | | | | | | | 6 | 22,200 |
| Union Bridge & Con. Co., Morgan City, La. | 2 | 7,000 | | | 4 | 15,400 | 3 | 7,500 | | | | | | | 9 | 29,900 |
| Universal S. B. Co., Houston, Texas | 3 | 10,500 | | | 4 | 15,400 | 2 | 7,100 | | | | | | | 9 | 33,000 |
| TOTALS | 62 | 230,200 | 1 | 4,700 | 27 | 103,950 | 26 | 84,250 | 2 | 4,000 | 2 | "A" | 4 | "A" | 124 | 427,100 |

### PACIFIC DISTRICT (NORTHERN AND SOUTHERN SECTION)

| BUILDER AND LOCATION | Cargo | | Finished Hulls | | Barge | | Sailing Vessel | | TOTALS | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. |
| Benicia S. B. Corp., Benicia, Calif. | 1 | 3,500 | 1 | 3,850 | | | 1 | 3,700<br>(Hull only) | 3 | 11,050 |
| Ralph J. Chandler Co., Wilmington, Calif. | 4 | 14,000 | | | 1 | 3,550 | 1 | 3,700 | 6 | 21,250 |
| Coos Bay S. B. Co., Marshfield, Oregon | 4 | 15,500 | 3 | 11,550 | 3 | 11,700 | | | 10 | 38,750 |
| Fulton S. B. Co., Wilmington, Calif. | 5 | 19,000 | 1 | 3,850 | 3 | 11,700 | | | 9 | 34,550 |
| Hammond Lumber Co., Humboldt Bay, Calif. | 4 | 14,000 | 2 | 7,700 | | | 1 | 3,700 | 7 | 25,400 |
| Kruse & Banks S. B. Co., North Bend, Ore. | 7 | 27,000 | 2 | 7,700 | 1 | 4,400 | | | 10 | 39,100 |
| Rolph Shipbuilding Co., Humboldt Bay, Calif. | | | 1 | 3,850 | 1 | 3,750 | 3 | 11,100 | 5 | 18,700 |
| Allen S. B. Co., Seattle, Wash. | 1 | 3,650 | | | 2 | 7,700 | | | 3 | 11,350 |
| Babare Bros., Tacoma, Wash. | 2 | 7,000 | 2 | 7,700 | | | | | 4 | 14,700 |
| Grant-Smith-Porter, Aberdeen, Wash. | 10 | 35,000 | 4 | 15,400 | 1 | 3,750 | | | 15 | 54,150 |
| Grays Harbor M. S. Co., Aberdeen, Wash. | 17 | 68,000 | 3 | 12,900 | | | | | 20 | 80,900 |
| Meacham & Babcock S. B. Co., Seattle Wash | 6 | 21,000 | 4 | 15,400 | 2 | 7,500 | | | 12 | 43,900 |
| Nilson & Kelez S. B. Corp., Seattle, Wash. | 4 | 14,000 | 2 | 7,700 | | | | | 6 | 21,700 |
| Pacific American Fisheries, S. Bellingham, Wash. | 7 | 24,500 | | | | | | | 7 | 24,500 |
| Puget Sound B. & D. Co., Seattle, Wash. | 2 | 8,000 | 2 | 10,400 | | | | | 4 | 18,400 |
| Sanderson & Porter, Raymond, Wash. | 2 | 7,000 | 7 | 26,950 | 1 | 3,750 | | | 10 | 37,700 |
| Seaborn Shipyards, Tacoma, Wash. | 10 | 35,000 | 2 | 7,700 | 2 | 7,100 | | | 14 | 49,800 |
| Sloan Shipyards Corp., Anacortes, Wash. | 6 | 21,000 | 4 | 15,400 | 2 | 7,500 | | | 12 | 43,900 |
| Tacoma S. B. Co., Tacoma, Wash. | 4 | 14,000 | 4 | 15,400 | | | | | 8 | 29,400 |
| Wright Shipyards, Tacoma, Wash. | 2 | 7,000 | 4 | 15,400 | 1 | 3,550 | | | 7 | 25,950 |
| TOTALS | 98 | 358,150 | 48 | 188,850 | 20 | 75,950 | 6 | 22,200 | 172 | 645,150 |

### PACIFIC DISTRICT (OREGON SECTION)

| | Cargo | | Finished Hulls | | Barge | | Sailing Vessel | | TOTALS | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. |
| Coast S. B. Co., Portland, Ore. | 8 | 28,000 | | | | | | | 8 | 28,000 |
| Feeney & Bremer, Tillamook, Ore. | | | 1 | 3,850 | | | | | 1 | 3,850 |
| Grant-Smith-Porter S. Co., Portland, Ore. | 30 | 111,000 | 1 | 3,850 | 1 | 3,750 | | | 32 | 118,600 |
| McEachern Ship Co., Astoria, Ore. | 8 | 32,000 | 2 | 8,600 | 1 | 3,750 | | | 11 | 44,350 |
| Pen insula S. B. Co., Portland, Ore. | 10 | 40,000 | | | | | 2 | 8,300 | 12 | 48,300 |
| Geo. F. Rodgers, Astoria, Ore. | 4 | 14,000 | | | | | | | 4 | 14,000 |
| St. Helens S. B. Co., St. Helens, Ore. | 2 | 7,000 | 1 | 3,850 | 1 | 3,750 | | | 4 | 14,600 |
| Sommarstrom S. B. Co., Columbia City, Ore. | 6 | 23,000 | | | 1 | 3,750 | | | 7 | 26,750 |
| G. M. Standifer Con. Corp., Portland, Ore. | 14 | 55,000 | 5 | 19,250 | | | | | 19 | 74,250 |
| Supple & Ballin, Portland, Ore. | 11 | 45,500 | | | | | | | 11 | 45,500 |
| Wilson S. B. Co., Astoria, Ore. | 5 | 17,500 | 1 | 3,850 | 1 | 3,750 | | | 7 | 25,100 |
| TOTALS | 98 | 373,000 | 11 | 43,250 | 5 | 18,750 | 2 | 8,300 | 116 | 443,300 |

### GREAT LAKES DISTRICT

| BUILDER and LOCATION | CARGO | | OCEAN TUG | | HARBOR TUG | | TOTALS | |
|---|---|---|---|---|---|---|---|---|
| | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. |
| Burger Boat Co., Manitowoc, Wis. | | | | | 6 | "A" | 6 | "A" |
| Dachel-Carter Boat Co., Benton Harbor, Mich. | | | | | 2 | "A" | 2 | "A" |
| Lake & Ocean Navigation Co., Sturgeon Bay, Wis. | 1 | 2,500 | | | | | 1 | 2,500 |
| Leathem & Smith T. & W. Co., Sturgeon Bay, Wis. | | | | | 9 | "A" | 9 | "A" |
| Northwest Engineering Works, Green Bay, Wis. | | | 1 | "A" | 12 | "A" | 13 | "A" |
| TOTALS | 1 | 2,500 | 1 | "A" | 29 | "A" | 31 | 2,500 |

NOTE "A"—No Deadweight for Tugs.

### TOTAL BY DISTRICTS

| DISTRICT | Cargo | | Tankers | | Finished Hulls | | Barges | | Sailing Vessel | | O-Tug | | H-Tug | | TOTALS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. |
| North Atlantic | 43 | 150,500 | | | 22 | 84,700 | 21 | 62,400 | | | 5 | "A" | 19 | "A" | 110 | 297,600 |
| Middle Atlantic | 2 | 7,000 | | | 7 | 26,950 | 12 | 35,650 | | | 5 | "A" | 10 | "A" | 36 | 69,600 |
| Gulf | 62 | 230,200 | 1 | 4,700 | 27 | 103,950 | 26 | 84,250 | 2 | 4,000 | 2 | "A" | 4 | "A" | 124 | 427,100 |
| Pacific (North & South Sections) | 98 | 358,150 | | | 48 | 188,850 | 20 | 75,950 | 6 | 22,200 | | | | | 172 | 645,150 |
| Pacific (Oregon Section) | 98 | 373,000 | | | 11 | 43,250 | 5 | 18,750 | 2 | 8,300 | | | | | 116 | 443,300 |
| Great Lakes | 1 | 2,500 | | | | | | | | | 1 | "A" | 29 | "A" | 31 | 2,500 |
| TOTAL | 304 | 1,121,350 | 1 | 4,700 | 115 | 447,700 | 84 | 277,000 | 10 | 34,500 | 13 | "A" | 62 | "A" | 589 | 1,885,250 |

NOTE "A"—No Deadweight for Tugs.

## Completed Program of Concrete Ship Construction

| BUILDER and LOCATION | CARGO | | TANKER | | TOTALS | |
|---|---|---|---|---|---|---|
| | No. | D.W.T. | No. | D.W.T. | No. | D.W.T. |
| Fougner C. S. B. Co., Flushing, Long Island, N. Y. | 1 | 3,500 | | | 1 | 3,500 |
| Liberty S. B. Co., Brunswick, Ga. | 1 | 3,000 | | | 1 | 3,000 |
| Liberty S. B. Co., Wilmington, N. C. | 2 | 7,000 | | | 2 | 7,000 |
| A. Bentley & Sons Co., Jacksonville, Fla. | | | 2 | 15,000 | 2 | 15,000 |
| Fred T. Ley Co., Inc., Mobile, Ala. | | | 2 | 15,000 | 2 | 15,000 |
| San Francisco S. B. Co., Oakland Bay, Calif. | | | 2 | 15,000 | 2 | 15,000 |
| Pacific Marine & Construction Co., San Diego, Calif. | | | 2 | 15,000 | 2 | 15,000 |
| TOTALS | 4 | 13,500 | 8 | 60,500 | 12 | 73,500 |

## Completed Program of Composite Ship Construction

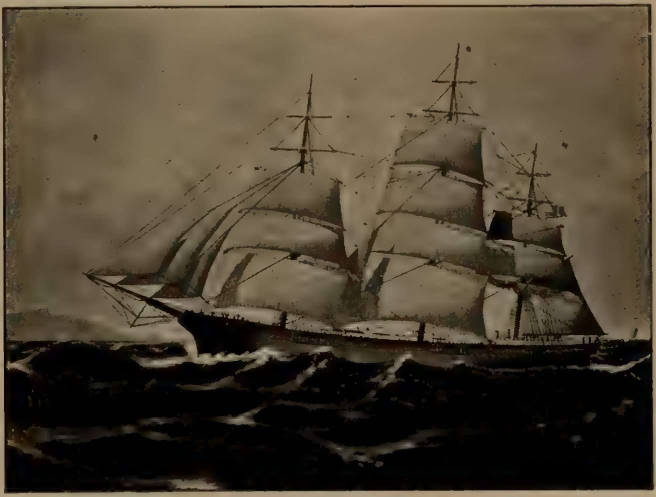
| BUILDER and LOCATION | CARGO | |
|---|---|---|
| | No. | D.W.T. |
| Merrill-Stevens, Jacksonville, Fla. | 4 | 14,000 |
| Merrill-Stevens, Slidell, La. | 2 | 7,000 |
| Mobile S. B. Co., Mobile, Ala. | 6 | 21,000 |
| Terry S. B. Corp., Savannah, Ga. | 6 | 21,000 |
| TOTAL | 18 | 63,000 |

# THE GLORY OF THE SEAS

## Donald McKay's Last Merchantman, the Days of Her Glory and Her Inglorious End

By F. C. MATTHEWS

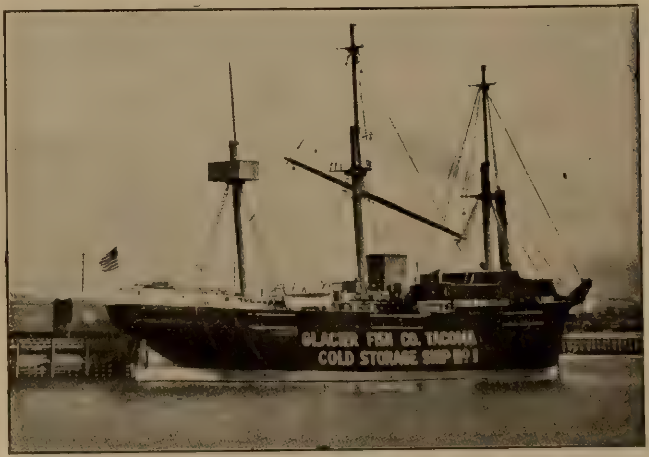
THE old Glory of the Seas, which a half century ago was one of the best known ships trading between San Francisco, New York and Liverpool, is, according to present reports, soon to be only a memory. Although press dispatches announce that Cornelius Vanderbilt has taken up with the Boston Chamber of Commerce the matter of arranging for the preservation of the historic hull, and considerable interest has been created on the Pacific Coast to further that worthy object, information now received from Puget Sound is that not much faith is put in the success of the scheme, and it is feared that the hull will soon be given to the flames to recover the metal in it. The writer recalls similar suggestions made in the past regarding other vessels, particularly in the case of the Young America, an extreme clipper of most beautiful lines, which established some records for speed never surpassed, besides having the reputation of never having been passed at sea; but these suggestions fell on deaf ears. But let us hope that this time sentiment will be successful in combating commercialism and that a memento of the time when America was first on the seas may appear before the eyes of future generations in actual form instead of existing in book-lore only.



As she was

### Description of the Glory

The Glory of the Seas was built at East Boston, Massachusetts, by Donald McKay, the famous designer and constructor of the fastest sailing ships the world has ever seen, the renowned "McKay 18-knotters." The Glory was launched in October, 1869, and was the last merchant ship to come from these yards, although McKay's last work was the United States sloop-of-war Adams, built in 1874. Some six years later the great master-builder passed away at Hamilton, Mass.



From the Standard Oil Bulletin

Last scene of all

The Glory was 265 feet from knight-heads to taffrail; 250 feet between perpendiculars; breadth of beam, 44 feet; depth of hold, 28 feet. She had three complete decks, the height of the two 'tweens being 8 feet 2 inches each. The lower and main deck beams were 16 inches square; upper deck beams 16 by 12 inches. She had cargo ports in the upper 'tween decks. The main hatchway in the upper deck was 12 by 10 feet and in the lower deck 12 by 14 feet. Her half-poop deck was 60 feet long with a house built into it 45 feet long, 24 feet wide and 8 feet 3 inches high. The cabins were magnificently fitted out. The topgallant forecastle was 35 feet long and 6 feet high; abaft the foremast there was a house 54 feet long, 18 feet wide, 8 feet 3 inches high. She had a splendid set of spars, finely proportioned; carried a skysail on mainmast only. The lower masts and bowsprit were hard pine, coaged with lignum-vitae and hooped with iron, and the topmasts and jibboom were also of Southern pine without knots or blemishes of any kind. In fact, in all the details of construction and equipment, the Glory was as nearly perfect as a ship need be.

In model she was by no means a clipper; she had 8½ inches dead-rise at half-floor; a fair entrance but short, with slightly concave lines below, but a long, clear run aft. Her 7 feet sheer gave her an air of lightness and buoyancy and the convex lines of her upper body forward terminated in a full sized classical female figure with flowing drapery. A short but interesting article appearing in the March issue of Standard Oil Bulletin states that this figure-head was secured by the daughter of McKay several years ago and now ornaments the gateway of her estate near Boston. Even in the days when beautiful hand-carved figure-heads were common on American ships, that borne by the Glory was conceded to be one of the most beautiful.

### Tonnage and Capacity

Custom-house records gave the gross tonnage of the Glory as 2102.57; the net, 2009 tons. This latter figure was subsequently reduced to 1939 tons. Had she been under a foreign flag, say that of Great Britain, her net probably would never have been over 1500, possibly 1600 at the most; according to the rules of measuring used by that government. It will thus be seen that our lawmakers, in their efforts to build up and perpetuate an American merchant marine, have always imposed on our ships at least one unjust and heavy handicap, that of excess and unfair charges resulting from over-measurement. The Glory's lumber-carrying capacity was given as 1,500,000 feet.

So far as can be traced, the largest wheat cargo carried from San Fran-

## Abstract of Log of Ship Glory of the Seas, J. N. Knowles, Master, San Francisco to Sydney, March-April, 1875

| Date 1875 | Days at Sea | Latitude | Longitude | Distance Made | Distance Sailed | Remarks: |
|---|---|---|---|---|---|---|
| March | | | | | | |
| 14 | | | | 50 | 50 | Sunday, March 14, 1875, tug Rescue took us in tow at 6 AM; 8:30 cast off; 9:30 dropped pilot just outside bar. At 12 M South Farallone bore N, 24 mi. Strong NW wind. Ship making 12 knots. |
| 15 | 1 | 33:27N | 126:22W | 278 | 278 | Ship very cranky and cannot carry as much sail as otherwise. Strong and fresh winds from NW and NNW; cloudy. |
| 16 | 2 | 30:30 | 128:50 | 216 | 216 | Moderate breezes from N to NNE; cloudy. |
| 17 | 3 | 28:04 | 131:18 | 196 | 196 | Same. |
| 18 | 4 | 25:34 | 133:33 | 193 | 193 | Same. |
| 19 | 5 | 22:28 | 135:20 | 215 | 215 | Moderate trades from NE; cloudy; squally. |
| 20 | 6 | 18:52 | 137:10 | 235 | 235 | Fresh trades from NE; squally; carried away fore topmst stunsail boom. |
| 21 | 7 | 15:18 | 138:13 | 223 | 223 | Same trades and weather. Made 1606 mi past week. |
| 22 | 8 | 11:30 | 139:15 | 236 | 236 | Same. |
| 23 | 9 | 7:45 | 140:15 | 233 | 233 | Same; sea smooth. |
| 24 | 10 | 5:30 | 140:51 | 138 | 138 | Light, baffling, moderate winds from NE to ESE, SE and E. |
| 25 | 11 | 3:01 | 142:31 | 180 | 180 | First part, light from E; middle and latter fresh trades from E to E by S; occasional rain squalls throughout. |
| 26 | 12 | 0:29N | 145:06 | 216 | 216 | Moderate SE trades; occasional rain squalls; between pleasant and hot weather. |
| 27 | 13 | 1:39S | 147:36 | 198 | 198 | Light trades from ESE; strong current setting WSW, 1½ knots per hour. |
| 28 | 14 | 4:20 | 150:25 | 235 | 235 | Fresh trades; heavy rain; squally. |
| 29 | 15 | 7:11 | 153:10 | 238 | 238 | Moderate SE trades throughout; clear; pleasant; current 14 mi SW. |
| 30 | 16 | 9:20 | 155:34 | 192 | 192 | Same trades and weather; current 15 mi W. |
| 31 | 17 | 11:03 | 157:27 | 152 | 152 | Light trades; pleasant; occasional rain squalls. Made by log 163 mi. |
| April | | | | | | |
| 1 | 18 | 12:40 | 159:10 | 141 | 141 | Light trades, baffling, NE to E; pleasant; sea smooth; hot. |
| 2 | 19 | 14:40 | 161:20 | 175 | 175 | Light winds; rain squalls; middle and latter, moderate trades from SE. |
| 3 | 20 | 15:58 | 163:26 | 145 | 145 | Light trades from SE to NE; occasional rain squalls; hot. |
| 4 | 21 | 17:30 | 166:17 | 188 | 188 | First and middle parts, same. End strong trades; made 1231 mi past week. |
| 5 | 22 | 19:38 | 170:18 | 261 | 261 | Strong trades. At 8 AM Savage Islands bore N 10 mi distant. |
| 6 | 23 | 21:53 | 174:44 | 284 | 284 | Strong trades; squally. At noon Eooa Island bore N, 23 mi dist. |
| 7 | 24 | 22:58 | 179:38W | 278 | 278 | Strong trades; rain squalls. |
| 8 | 25 | 23:58DR | 175:36E | 270 | 270 | Same throughout. Crossed 180° meridian, so drop a day. Made 270 mi by log. |
| 10 | 26 | 25:05 | 170:55 | 264 | 264 | Fresh trades from E. Sailed by log 275 mi. |
| 11 | 27 | 26:06 | 166:23 | 252 | 252 | Moderate from ENE to E; clear; pleasant. |
| 12 | 28 | 26:58 | 163: | 192 | 192 | Same with occasional rain squalls. Sailed by log 201 mi. Made 1801 mi past week. |
| 13 | 29 | 27:48 | 160:22 | 148 | 148 | Light breezes from NE to ENE. Current setting S 10 mi. Sailed by log 154 mi. |
| 14 | 30 | 28:22 | 158:42 | 94 | 94 | Light baffling airs from ENE to NE; ends cloudy and overcast. |
| 15 | 31 | 28:46 | 156:58 | 94 | 100 | Light, baffling, calm; rain squalls; ends moderate from SE. |
| 16 | 32 | 29:47 | 154:55 | 124 | 130 | First strong from SE to SSE; middle and latter light to calm. |
| 17 | 33 | 30:25 | 154:22 | 47 | 146 | First and middle light baffling; latter strong gales from SE. Current strong to NNE. |
| 18 | 34 | 31:42 | 154:12 | 78 | 149 | Strong, moderate from SE to ESE. Pleasant. |
| 19 | 35 | | | 185 | 185 | First part, moderate from ESE to SE; cloudy and frequent rain squalls. At 12 midnight, Port Stephens light bore NNW 20 mi distant; at 5 AM Newcastle Light bore NW 20 mi distant; at 8 AM made North Head and at 9 o'clock took Sydney pilot; at 11:30 anchored in Sydney harbor; made past week 770 mi; sailed 952 mi. Passage anchor to anchor 35 ds 11 hrs 15 minutes; 35 ds 5 hrs 15 min, pilot to pilot. Total distance made 6844 mi. Total distance sailed 7026 mi; average 8⅛ knots per hour. |

cisco to Great Britain by the Glory was 68,149 centals in May, 1880. On most of her grain-carrying voyages she had between 67,000 and 68,000 centals. The lightest cargo was 50,393 centals in November, 1877, the year of low freights. On her voyage from Cardiff in 1881 she had 1732 tons of coke and 600 tons of pig iron. In 1874 she brought 2100 tons Lancashire coal from Liverpool and narrowly missed destruction by fire, as will appear later. While engaged in the coast coal trade she generally loaded upwards of 3300 tons, and on arrival at San Francisco June 3, 1886, from Tacoma, reported having on board 4000 tons.

### The Glory's Cape Horn Passages

Between 1870 and 1885 the Glory made twelve round trips between San Francisco and New York or British ports as follows: In 1870—from New York, 120 days; return to Queenstown, 112 days. 1871-1872—from Cardiff, 120 days; return to Liverpool, 112 days. 1872-1873—from Liverpool, 120 days; return to Liverpool, 128 days. 1873-1874—from New York, 96 days; return to Liverpool, 118 days. 1874-1875—from Liverpool, 131 days; return to Liverpool, 133 days. 1876 — from Liverpool, 114 days; return to Liverpool, 103 days. 1877—from Liverpool, 144 days; return to Liverpool, 107 days. 1878-1879 — from Liverpool, 153 days; return to Cork, 111 days. 1880—from New York, 118 days; return to Cork, 120 days. 1881-1882 — from Cardiff, 129 days; return to Havre, 220 days (actual sailing days, 131, being 54 days San Francisco to Valparaiso and 77 days thence). 1882—from New York, 128 days, returning to Liverpool in 1885 in 117 days. 1885 — from Liverpool to San Pedro, 121 days.

Of her outward passages, four were from New York, averaging 115½ days; shortest, 96 days, in 1874; longest, 128 days, in 1882. Six passages were from Liverpool, averaging 130½ days: shortest, 114 days, in 1876; longest, 144 days, in 1877. She sailed to San Francisco direct from Cardiff on two occasions in 120 and 129 days, respectively.

Of her return voyages, seven were to Liverpool, averaging 116⅞ days: shortest, 103 days, in 1877; longest, 133 days, in 1875. Three passages were to Queenstown or Cork, averaging 114½ days: shortest, 111 days, in 1879; longest, 120 days, in 1880.

Of the round trips, computed in sailing days, the shortest was in 1873-1874, 214 days, and the longest in 1878-1879, 264 days.

In 1875 she made an intermediate voyage from San Francisco to Sydney, Australia, and return: was 35 days going down and 53 days coming back. Her downward passage is the record run to this date and a copy of her log accompanies this article.

### Record Run to Australia

Although the Glory of the Seas recently has been given much press publicity as an extraordinarily fast sailer, a record-breaker and type of the famous American clipper ship, facts do not justify the extravagant praise bestowed. Her 35-day voyage from San Francisco to Sydney, Australia, is a record and in some respects was made under unfavorable conditions, while the winds and weather encountered were very favorable. For lack of sufficient ballast, the ship was so crank that with a beam wind she was nearly over on her beam ends, and stun'sail booms and royal yards had to be sent down. From port to the line she was 12 days, about as fast as has been made by any cargo-laden vessel; had carried strong north wind from the heads to the northeast trades, which proved moderately strong, and took her into the southeast trades without any delay. These southeasters were moderate to strong down to 27 degrees south, the westing being run down to 160 degrees east, which was crossed the twenty-eighth day from port. The remaining 700 miles was done in seven days in light winds. Her best five days' runs were 278, 284, 278, 270 and 264 knots. On the return voyage, 53 days from Sydney, the best day's run was 263 miles in a strong gale, with a heavy sea on, ship taking much water.

The Glory at a San Francisco wharf

The fine passage from New York in 1873-1874 must be considered due to a continuation of generally favorable winds and weather and not to any high rate of speed attained. The best day's run was but 300 knots in a strong sou'-easter off the California coast. Her log shows only four other days on which over 250 were made, 252, 261, 256, 258, respectively. From Sandy Hook to the Line she was 27 days; thence to 50 degrees south she had a good run of 22 days; best, 220; poorest, 82; under 100 only two days; under 150, seven days only. Rounding the Horn she was but 11 days to 50 degrees in the Pacific, thence coming up to the Line in the fast time of 19 days; best day, 258; poorest, 143; second poorest, 166; under 186, five days only. She made land off Pigeon Point in 16 days from the Line, a very good run. Best day, 300; poorest, 84; average, slightly over 169. Her landfall is described in the log as follows: "January 16, 1874: first part, strong breezes from southeast, thick and rainy. At 6 p. m. all sails which had not been blown away were taken in, except lower topsails, and ship was hove-to, judging ourselves near land. At daylight made land off Pigeon Point, having drifted to southard during night. At noon was up to the bar. Found pilots all inside and bar breaking. Stood off-and-on all night; in morning stood in, went over the bar, took pilot and came to anchor." The passage was 94 days from land to land; 95 days 2 hours from New York anchorage to San Francisco bar, and 96 days from anchor to anchor, the ninth best trip on record.

### Competitive Sailing

While we have no record of any actual "races" in which the Glory took part, the following are instances in which her sailing powers were matched against other vessels. In February and early March, 1874, there left San Francisco for Liverpool the Seminole, Ericsson (a converted wooden steamer), Glory of the Seas, Wasdale (British iron ship), and Young America. Arrivals out were, in the order named, 112, 103, 118, 117, and 103 days. Ericsson had sailed six days before the Glory and arrived out twenty days before her. Wasdale sailed the day after Glory and both arrived out the same day. Young America sailed fourteen days after Glory and a few wagers were made in San Francisco that she would be the first to reach Liverpool. She arrived off Liverpool bar twelve hours ahead of the Glory.

The Glory and the British iron ship Langdale both left Liverpool August 13, 1874, and arrived at San Francisco December 22 and 23, respectively, passages 131 and 132 days. The logs of both ships show that they met in the Straits of Le Maire October 8 and were again in company October 20, 21 and 22. On arrival at San Francisco Captain Jenkinson of Langdale took exception to a portion of the published memorandum of the Glory, to which Captain Knowles replied, with a card, stating: "If it will satisfy the captain of the Langdale, I will say that whenever I raised his ship, she was astern of the Glory, but came up and passed her. When I got to Frisco there was no Langdale, but as the passages of the ships were 131 and 132 days, respectively, I think that is sufficiently long to prevent any discussion as to the great speed of either."

In 1870 the Glory beat Black Hawk one day and Charger two days to Cork, all sailing from San Francisco in July. Leaving San Francisco in February, 1872, for Liverpool, the Glory reported out in 112 days; La Escosesa (British iron ship) had 122 days, and clipper Young America 104 days. The Glory sailed from San Francisco January 15, 1873; the British composite wool-clipper John Duthie of Aberdeen got away three days later, followed in a further three days by the British iron ship Montgomery Castle. Duthie arrived first in 122 days, Montgomery Castle and Glory arriving together in 122 and 128 days, respectively, all at Liverpool. In 1876 the Glory beat everything sailing in October except the Young America, which was 99 days to New York, and the British composite ship Hawkesbury, which was 100 days to Havre. Glory's time was 103 days to Liverpool. She had beaten the America, Sterling, Triumphant, Nearchus and other Americans and the crack Britishers, Borrowdale, Cormorant, Auriga, Shalimar, Seaforth, City of Perth and others. The Glory arrived at Cork on July 28, 1879, 111 days from San Francisco and on the same day the St. Stephen reached Liverpool after a passage of 101 days.

### Some Mishaps

In October, 1880, the Glory grounded at Dublin and was strained, was docked there and repaired. Sailing from San Francisco July 11, 1881, for Havre, she put into Valparaiso September 3, leaking in topsides and with pumps choked. Cargo had shifted, was discharged and about 5000 sacks of wheat, damaged, was sold. Expense in port, over $20,000. Ship repaired, reloaded and reached Havre February 16, 1882, in 77 days from Valparaiso. In March, 1904, she grounded off Black Point, San Francisco, but was hauled off with little damage.

On her passage from Liverpool in 1874, her cargo of Lancashire coal became heated and several times steam could be seen coming from the hatches, which had to be kept off nearly all the voyage. Several times in handling the coal it was so hot as to be almost impossible to touch and the escape of the vessel from destruction was by a narrow margin.

On one occasion while carrying coal from Puget Sound to San Pedro and before the jetty was finished but had water over it, the Glory once sailed in over it in one of the worst storms ever known there. The wind and waves lifted her right over and landed her inside without damage. After being discharged, a long time was taken to get into deep water again, the ship even then drawing more water than the harbor would admit at that time.

### Last Days of the Glory

We have seen that the last Cape Horn passage was in 1885, when the ship came out from Liverpool to San Pedro. She then went coasting, carrying principally coal from Puget Sound to San Francisco or San Pedro, with an occasional trip to Alaska. In 1911 she was sold at public sale at Victoria to F. C. Johnstone, president of the Tongass Trading Company of Ketchikan, who represented a number of Seattle and Alaska men. Information just received from a competent authority of Port Townsend is as follows: "The Glory was converted into a floating cannery by Mr. E. A. Sims and his associates. The idea was to tow the vessel around where the fish were most plentiful and can them right on the vessel. This scheme of a floating cannery was not a success, possibly due to the expense of towing and the constant ocean swell. She was then converted into a refrigerating ship, fitted with ice plant, etc., to be towed north and stocked with fish in cold storage. This, too, has not been a success and I saw her a few months ago on the tide flats in Tacoma harbor."

Reports from Tacoma are to the effect that she has been dismantled by the Tacoma wrecking firm of Maingault & Graham and that the hulk is now at the docks of the Glacier Fish Company there. Opinion does not seem to be very optimistic as to the result of an effort to purchase her remains and take them to Boston.

### Owners and Masters of Old Glory

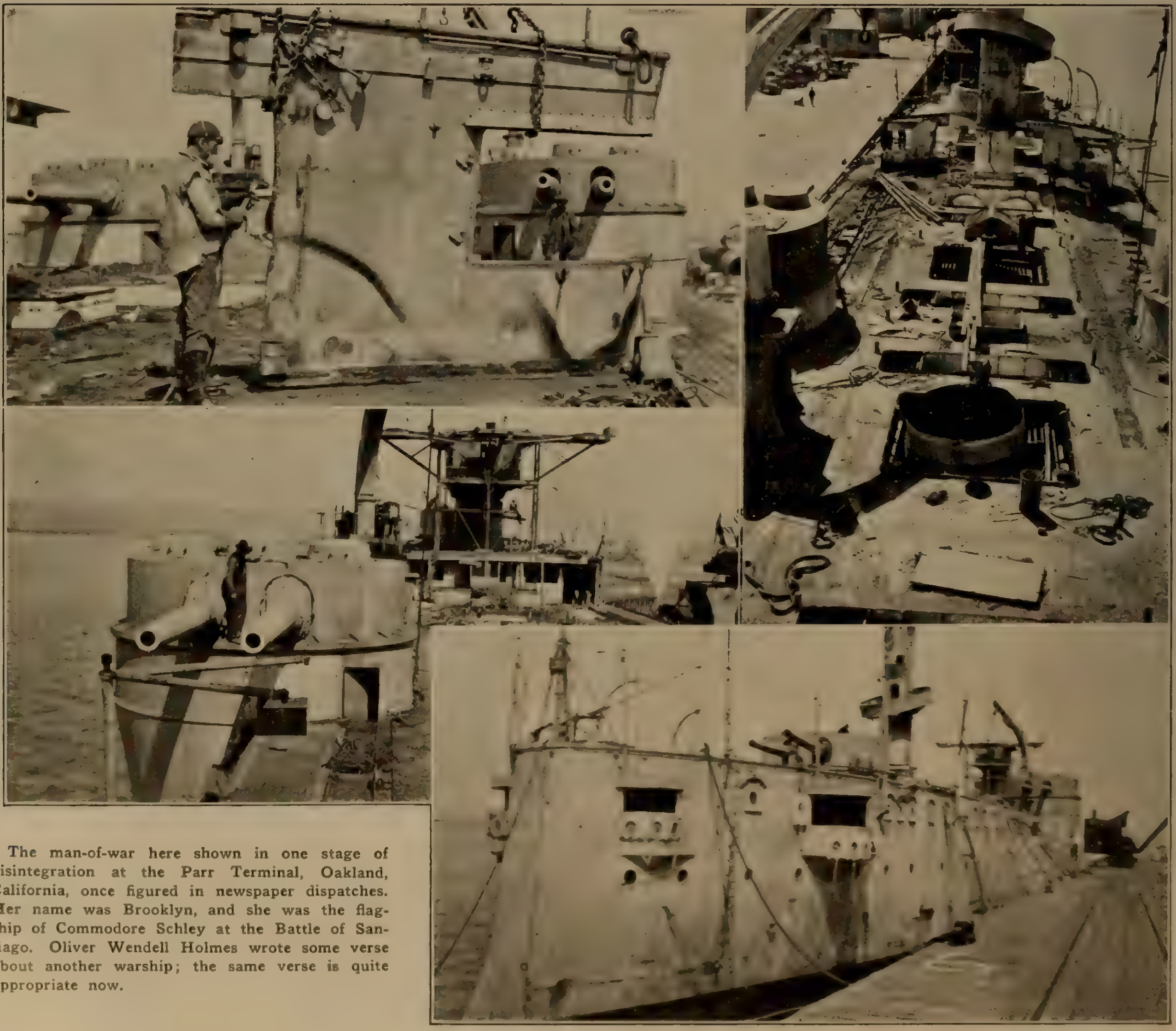
On her maiden trip she came out under command of her owner and builder, Donald McKay, but Captain Chatfield took her from San Francisco to Liverpool. She was then sold to J. Henry Sears of Boston, who put Captain Josiah N. Knowles in command. In 1877 Captain McLaughlin succeeded and continued until relieved by Captain Joshua S. Freeman about 1885.

The latter continued until the ship was sold and for a time he appeared as managing owner. According to the Seattle Post-Intelligencer, March, 1911, the vessel was operated at times by the Seattle Shipping Company; then by Barneson-Hibbard Company. In 1910 she was purchased by Captain W. J. McDonald and R. A. Cunningham of Victoria, being a year later again sold for conversion into a barge, as heretofore stated.

It does not appear that the ship was ever much of a money-maker for her owners. The freight list on her maiden voyage was $31,000. The best grain rate obtained was £3-12/6 in 1881. In 1877 she got only £1-15/-. At San Francisco in the summer of 1875 freights were so low that her owners loaded her with wheat for Liverpool on their own account. In December, 1882, after discharging her New York cargo, she got in a set of new masts and was then laid up back of Goat Island, San Francisco, until February, 1885. For a couple of years from 1904 she was again laid up, this time in Oakland Creek, so that she had some long spells of inactivity. She could not command paying freights in competition with steel and steam.

A correspondent at Aberdeen, Washington, who knew the Glory well in her prime, writes: "I can picture her so plainly coming up the channel, past Alcatraz, with Captain Knowles in command; letting go her 'hook' and swinging to the flood, with topsails flat aback, royals and topgallants hanging in the clews. It makes one heartsick to think of her as in those days and now as she recently looked in Tacoma, putting one in mind of a receiving-ship alongside the Navy Yard, all housed over and only lower masts standing. I recall that once I climbed aboard her at Pacific street and up the mizzen-rigging I went. The mate, a Mr. Colby, hailed me. I, without compunction, told him to go to ——. I went from mizzen-royal to main-skysail-yard, keeping an eye on Mr. Mate; crossed over the fore-royal and down the royal-stay clean out to her flying jibboom. Coming in to the forecastle-head the mate was laying for me, and, say, you can tell 'em, I got as fine a rope's ending as kid ever got. I also got nearly as bad a dose on the old Triumphant, Captain Gibbons. But now all we can say is, 'Sheets and tacks—let go and haul', and it's sickening to hear some of these half-baked 'skippers' start to talk; they couldn't tell a 'foreyard lift' from a 'duff' bag halliard."

# AND NONE SO POOR TO DO HER REVERENCE



The man-of-war here shown in one stage of disintegration at the Parr Terminal, Oakland, California, once figured in newspaper dispatches. Her name was Brooklyn, and she was the flagship of Commodore Schley at the Battle of Santiago. Oliver Wendell Holmes wrote some verse about another warship; the same verse is quite appropriate now.

# SHALL AMERICA CAPTURE THE ATLANTIC BLUE RIBBON?

By RENWICK Z. DICKIE

A CONSIDERABLE amount of discussion has already taken place in the technical press and among naval architects as to the conversion of the "scrapped" United States battle-cruisers into Atlantic passenger liners. We would like to add to that discussion a few suggestions as to the possibilities in outfitting these battle-cruisers for a one-class service. The tendency in present day passenger steamship design is very strongly in the direction of less class division in passenger service and we find on the North Atlantic ferries, both in British and American ships, liners that carry only third-class passengers and others carrying only first-class and steerage. These vessels are proving very popular and when sailing on a similar date to a vessel carrying three classes of passengers are shown a decided preference by the early bookings for passage at a higher rate. The purpose of this article therefore is to suggest the completion of the battle-cruisers as liners giving a service entirely of one class, with passenger rates ranging from the average second-class to above the highest present first-class rate.

Under such a scheme the upper promenade and boat decks would be fitted with de luxe suites containing two bedrooms, veranda, drawing room, private dining room, private bathroom and wardrobe, thus making a distinct advance on present luxuriousness and giving an exclusive feature not to be found on the present liners. These suites could be fitted up to suit the most fastidious of travelers and would command rates accordingly.

The remainder of the passenger accommodations would be of the first-class style, and all of the public rooms of the ship would be fitted up in the very best manner for the common use of all of these cabin passengers. We would recommend the installation of a large restaurant giving the option of a la carte service at irregular hours. On such a ship there would be but one steward's department, one main dining saloon, one library, one smoking room, one lounge, one swimming bath, one gymnasium, and a commodious movie theatre for the use of the entire passenger list.

For purposes of comparison we have roughly sketched out in the accompanying table the figures for the Aquitania and for a battle-cruiser at an assumed draft of 35 feet fitted up in the manner suggested. In setting down the figures for a battle-cruiser we have not considered subsidy nor have we considered the advantages in fuel consumption of the turbo-electric drive.

At the sea speed of twenty-three knots the subsidy available for such a liner under the bill now pending before Congress would mean an additional income of about $1,500,000 a year. On the other hand this subsidy income is based on the assumption that 10 per cent net profit is the maximum limit for subsidized ships, and if more than 10 per cent is made the direct subsidy has to be paid back to the United States treasury. The great advantage derived from the merchant marine act, if it is passed, by such a liner would be the availability of the construction fund at low rates of interest, thereby reducing to a minimum the fixed capitalization charge. At any rate, should the present merchant marine act be passed and the subsidy become available, its use, together with the fuel saving which is possible with turbo-electric drive as compared with the direct turbine drive, can more than offset any difference in cost of operation due to higher wages of an American staff and crew.

It will readily be seen from this table that the battle-cruiser arranged as a one-class passenger liner, in so far as her actual operating gross revenue is concerned, shows an advantage of approximately 29 per cent over the Aquitania when operating on the same route.

In considering the expense of operation, it would seem possible with the turbo-electric drive, as indicated above, to make a considerable saving in fuel over the direct connected turbines. Large marine power plants of the turbo-electric type have shown a fuel consumption of .9 of a pound of oil per horsepower, and there would also be a gain in propeller efficiency due to the slower revolutions than in the direct turbine drive, which would have a fuel consumption of about 1 pound of oil per H. P. per hour. The work of the stewards' department on a one-class vessel could be much more economically handled than the similar department's operating expense on a three-class liner.

Taking into consideration the fact that the present existing immigration law restricts the total annual immigration travel to about one-sixth of the steerage capacity of the present fleet of liners engaged in the North Atlantic trade, it would seem wise for new American Atlantic liners to confine themselves to a strictly one-cabin class.

**Comparison of Aquitania with Battle Cruiser Liner**

| | Cunard Aquitania | Battle Cruisers Completed as Passenger Liners |
|---|---|---|
| Length B. P. | 868′ 8½″ | 850′ |
| Beam | 97′ | 105′ 5″ |
| Draft | 31′ 3″ | 35′ |
| Displacement | 51,700 | 50,000 |
| Block coefficient | .609 | .558 |
| Type of machinery | Turbine | Turbo-Electric |
| Type of boilers—fuel | Oil | Watertube Oil |
| Maximum shaft H. P. | 60,000 | 60,000 |
| Maximum speed | 25 | 25 |
| Sea speed | 23 | 23 |
| Number first class passengers | 618 | 3,000 |
| Minimum first class rate | 275 | 200 |
| Number of second class passengers | 614 | |
| Minimum second class rate | 140 | |
| Number of third class passengers | 1,998 | |
| Minimum third class rate | | 100 |
| Total number of passengers | 3,230 | 3,000 |
| Cargo capacity in tons of 100 cubic feet | 1,200 | 3,000 |
| Amount of first class minimum fares | $169,950 | 600,000 |
| Amount of second class minimum fares | 85,960 | |
| Amount of third class minimum fares | 199,800 | |
| Total amount of minimum fares | 455,710 | 600,000 |
| Rate of express freight per ton | 25 | 25 |
| Amount of freight money per trip | 30,000 | 75,000 |
| Total passage and freight money per trip | 485,710 | 675,000 |

# SCRAPPING THIRTEEN CAPITAL SHIPS

## Twelve Vessels Remain on Ways; Probably will be Torn Down Without Launching. Percentages of Completion, Ship Only, Range from 4.3 for Massachusetts to 70.3 for Washington

THE accompanying photograph of the battleship Montana, as she lies on the ways at the Mare Island Navy Yard, will convey some impression of the meaning of "scrapping" thirteen capital ships under the limitation of armaments treaty. Disposing of these vessels is easier talked of than accomplished, even though the general public has little or no conception of the magnitude of the task involved in tearing them apart frame by frame and plate by plate.

As shown in the photograph, which was taken from forward looking aft, the Montana is 19 per cent completed, ship only. The percentage of the total completed is 27.6, but that latter percentage includes everything that goes to make up a dreadnought, and therefore has little meaning when scrapping the uncompleted hull itself is under discussion. Erection of the Montana has progressed up to the third deck, and about 75 per cent of all material erected has been riveted. No machinery of any description and no boilers have been installed; the same is true of armorplates, although practically all for the Montana have been delivered at Mare Island. On top of the structure shown in the photograph would have been erected an armored deck (the third); second, main, upper and superstructure decks, and all upper works such as bridges, masts, stacks, turrets, conning tower, and so on.

### One Dreadnought Launched

Of the thirteen vessels to be scrapped, only one, the dreadnought Washington, under construction by the New York Shipbuilding Corporation, has been launched. Had Japan not insisted upon retention of the Mutsu, however, the Colorado, building by New York Ship, and the West Virginia, under construction by Newport News Shipbuilding & Drydock Company, both of which have been launched, would have been destroyed as well. In view of the retention of the Mutsu by Japan, these vessels will be completed.

Twelve vessels, therefore, remain on the ways. The Navy Department has no intention at present of completing any to a stage to permit of launching; this means that all will be broken up on the ways. The task will be unusual, if not unique, and will form an interesting chapter in the history of shipbuilding, or rather of ship-destruction. The six South Dakota dreadnoughts were designed with the following dimensions: length over all, 684 feet; between perpendiculars, 660; breadth on load water-line, 105 feet; normal displacement, 43,200 tons. The six Lexington battle-cruisers were to be 874 feet in length over all; 850 between perpendiculars; 101 feet 8 inches in breadth at the load water-line; of 43,500 tons normal displacement. The thirteenth ship to be scrapped, the Washington, is a sister to the Maryland, Colorado and West Virginia, the class being modified Californias and Tennessees, 624 feet long over all; 600 between perpendiculars; 97 feet 3 inches in breadth at the load water-line; displacing 32,600 tons.

### Percentages of Completion

The Montana lags behind most of the dreadnoughts of her class, which is headed by the South Dakota. That vessel was 31.6 per cent completed March 1; the Indiana, North Carolina and Iowa averaged about 27 per cent; the Massachusetts was last with only 4.3. The battle-cruisers, on the other hand, ranged from 1.5 to 28 per cent. Nevertheless, the photograph of the Montana does serve as an example of what conditions will be encountered by ship-breaking gangs.

In the following table appear the names of vessels to be scrapped, the builders, and the percentages of completion, ship only, of October 1, 1921, and March 1, 1922, the latter holding true for the present:

| | Percentage of Completion, Ship Only | |
|---|---|---|
| Battleships— | Oct. 1,'21 | Mar.1,'22 |
| Washington, New York S. B. Corp. | 63.5 | 70.3 |
| South Dakota, New York Navy Yard | 27.0 | 31.6 |
| Indiana, New York Navy Yard | 24.3 | 27.2 |
| Montana, Mare Island Navy Yard | 19.0 | 19.0 |
| North Carolina, Norfolk Navy Yard | 27.1 | 27.1 |
| Iowa, Newport News S. B. & D. D. Co. | 25.0 | 27.4 |
| Massachusetts, Fore River, Bethlehem | 3.9 | 4.3 |
| Battle-Cruisers— | | |
| Lexington, Fore River, Bethlehem | 16.5 | 24.2 |
| Constellation, Newport News | 12.6 | 19.5 |
| Saratoga, New York S. B. Corp. | 20.0 | 28.0 |
| Ranger, Newport News | 1.1 | 1.5 |
| Constitution, Philadelphia Navy Yard | 6.3 | 8.4 |
| United States, Philadelphia Navy Yd. | 5.9 | 7.1 |

## DEPARTMENT OF COMMERCE IN ALASKA

IT is the intention of the Department of Commerce to send a party, headed by Assistant Secretary C. H. Huston, to Alaska this summer for the purpose of making a general investigation of conditions in which that department is particularly interested. The Bureau of Fisheries, the Coast and Geodetic Survey, the Lighthouse Service and the Steamboat-Inspection Service are the bureaus of the Department of Commerce which are closely identified with the affairs of the territory. It is the purpose to determine in what ways these bureaus can be made of greater benefit in developing Alaska.

Particular attention will be devoted to the salmon fisheries of the territory, which yield products of an average annual value of about $40,000,000 and in normal seasons give employment to upwards of 20,000 persons and represent an investment of about $70,000,000.

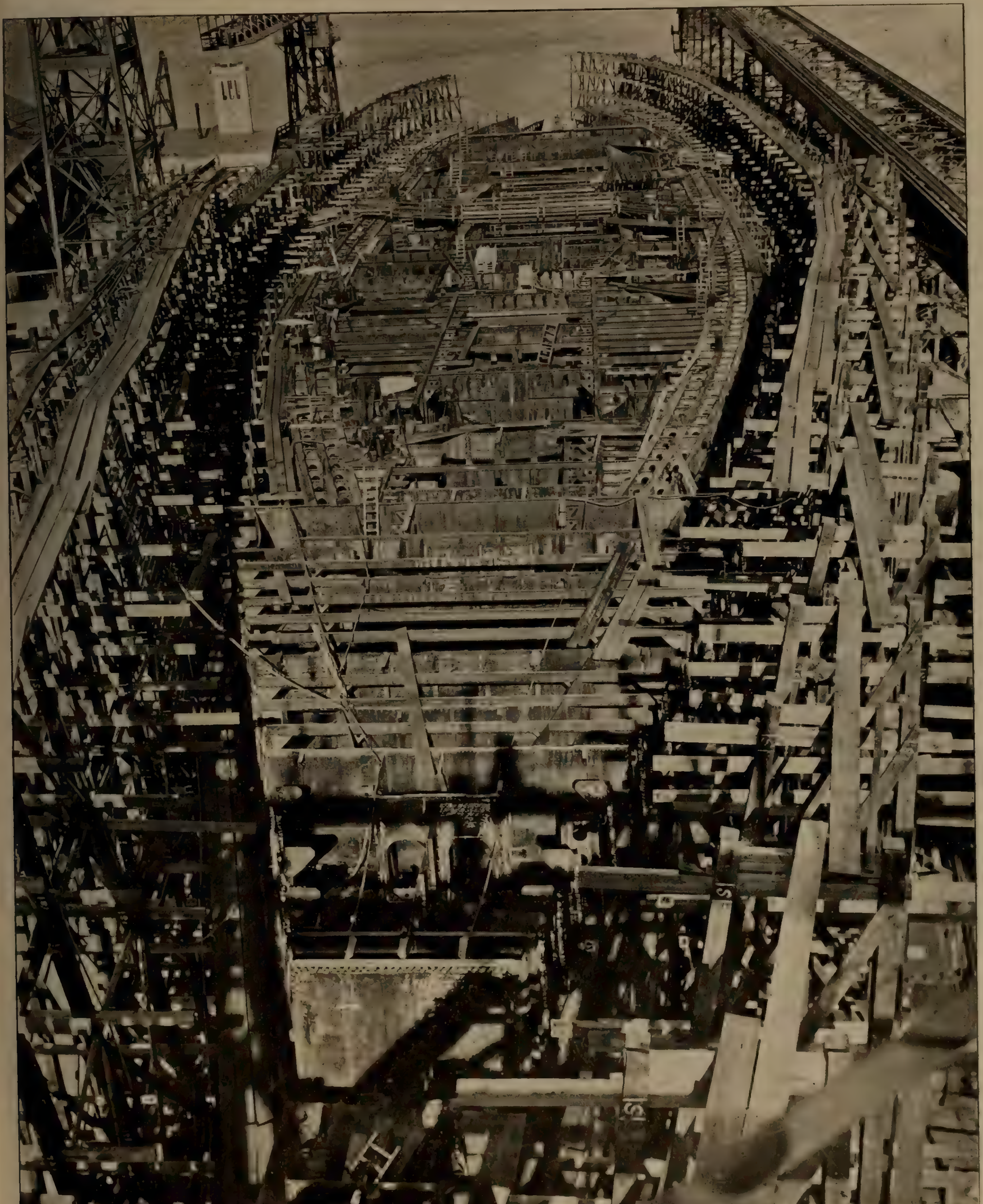
It will be the purpose also to observe conditions in respect to the fur-seal industry at the Pribilof Islands, which work is administered by the Department of Commerce through the Bureau of Fisheries. The American fur-seal herd resorts to the Pribilof Islands for breeding purposes, and each year some of the surplus male seals are killed there and the pelts subsequently disposed of for the account of the government. In the season of 1921 there were taken 23,671 sealskins from the herd, which numbered 581,453 animals. The annual censuses of the herd show a satisfactory growth each year, the net increase being about 5 per cent after deducting those killed.

The skins are dressed, dyed and machined, and sold at public auction through the department's selling agents at St. Louis, and the proceeds are covered into the Treasury of the United States. On the average the sealskins yield the government from $1,000,000 to $2,000,000 annually.

The government also engages in foxing operations on the Pribilof Islands, the take averaging about 1000 blue skins each year, which net about $100,000.

# ONE OF THE DOOMED DREADNOUGHTS

How the Montana, Which is to be Scrapped Under the Armaments Treaty, Appears on the Ways at Mare Island Navy Yard. The Photograph was Taken from Forward Looking Aft



# REVIEWS OF NEW BOOKS

**Standard Seamanship for the Merchant Service,** by Felix Riesenberg, C. E.; 950 pages, 625 illustrations, numerous diagrams and tables; bound in blue buckram with gold stampings; forms one of the series of nautical manuscripts published by D. Van Nostrand Company, New York.

The literature of the practical art of seamanship is rather meager. In recent years we have had several excellent manuals on naval seamanship, but so far as the practical work of the merchant marine of the world is concerned there has been no book of merit on the subject published since late in the last century, when the manual of "Practical Seamanship for the Merchant Marine" by Todd & Whall appeared. That work was the first to take up the problems growing out of the use of steam in the merchant marine, although large parts of it were still devoted to the sailing craft. Todd & Whall's "Practical Seamanship" has been many times revised and is still in large demand.

The book under discussion is much more complete than anything that has been published to date. It not only treats exhaustively all of the modern phases of what is ordinarily considered under the name of seamanship, but also takes into account stowage, the preparation of cargo holds, the carriage of livestock, the consideration of passengers, the mechanism and problems connected with modern cargo handling gear, and a considerable amount of marine engineering.

A summary of the contents will give an idea of the scope of the work: types of vessels; hull construction; the mechanics of rigging; standing and running rigging for both sailing ships and steamers; deck machinery; stowage; a special chapter on the bulk tanker; a special chapter on passenger vessels; a complete treatment of the small boat, including construction, rigging for handling on the ship and in the water, management of open boats at sea and boat sailing. There is the usual chapter on what might be called quartermaster's routine, including the compass, the lead, the log and piloting, and this chapter is brought up to the minute with descriptions and directions for the most modern apparatus.

Rules of the road at sea might be included as one of the author's specialties, since he has written a special book on the subject. The chapter covering this part of the work is admirably arranged and includes international, inland and United States pilot rules. Ship maintenance in the handling of both steamers and sailing ships, weather at sea, and safety on board ship are all covered with great completeness of detail and convenient arrangement, completely indexed and cross-indexed so as to make this a very handy manual for all of those who are interested in conditions of sea life.

Mr. Riesenberg is to be congratulated on having produced a useful, comprehensive and much needed book on a timely subject.

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**The Law of the Sea,** by George L. Canfield and George W. Dalzell; 325 pages, bound in red buckram with gold stampings; published by D. Appleton & Company, New York.

This book is the third in the shipping series of textbooks intended for training courses in steamship business. It is a manual of the principles of admiralty law, written primarily for students, but also with the idea in mind that it would form a useful handbook for mariners and ship operators. The salient features of necessary statutes are noticed in the work and references given so that by search in the various compilations of navigation laws complete legal text may be brought to bear on the subject to supplement the matter in the book. There is added in an exhaustive appendix a competent summary of the navigation laws of the United States, prepared by Jasper Yeates Brinton, which makes a very convenient reference work for the student.

The subject matter treated covers general maritime law, title and transfer of maritime property, law covering owners and managers, masters and seamen. The various statutes and legal customs covering carriage by sea and the contracts, documents, liabilities and limitations arising in connection therewith are quite exhaustively treated in three chapters. These are followed by two chapters on maritime liens, mortgages and bonds. Then comes the consideration of collision, towage, pilotage, salvage and general average. Crimes committed at sea, wrecks and derelicts, wharfage and moorage, and admiralty remedies finish the contents. Obviously the treatment of such a list as this covered in twenty-two pages must be rather sketchy, and the chief value of this book will be to guide the student of marine law to the proper sources of information and to indicate their intelligent use.

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**The Foreign Relations of China,** by Mingchien Joshua Bau, M. A., Ph. D.; 510 pages, bound in red buckram with gold stampings; published by Fleming H. Revell Company, New York.

The purpose of this work, which is dedicated to the suffering people in China, is "to study the foreign relations of China, and to work out for her a foreign policy." With this object in view the author has attempted to view the foreign relations of China as a whole and has limited the scope of his work to the more salient features.

The book is divided into six parts. Part I covers diplomatic history of China. Part II treats of the policies of great world powers in China, and Part III is devoted exclusively to the policy of Japan in China. Part IV is entitled "Impairments of China's Sovereignty," and treats of extra-territoriality, concessions, leased territories, spheres of influence, tariff autonomy, etc. The new problems arising since the war are discussed in Part V. These include international banking consortium, League of Nations and Shantung. In Part VI the author develops his proposed foreign policy for China in five chapters bearing the captions Preservation, Recovery, Golden Rule, and World Welfare, for the first four, while the fifth is devoted to a special policy in Japanese matters.

Dr. Bau is a Chinese educated at Tsing Hua College, China; is a graduate also and holds degrees from Yale, Columbia and Johns Hopkins. He may therefore be said to combine the viewpoint of the Chinese gentleman with that of a modern, wide-awake young American. He has produced a book that makes good reading and follows a moderate progressive policy. The book should be of great value both to Americans and Europeans in their better understanding of the Chinese viewpoint, and to the educated Chinese in assisting him in a more intelligent formulation of his plans for a new diplomatic policy in the Celestial Republic.

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**The Design and Construction of Oil Engines,** by A. H. Goldingham; 480 pages, 200 illustrations, bound in blue buckram with gold stampings; published by Spon & Chamberlain, New York; price $4.

This is the fifth edition of the author's well known treatise on oil engines. It has been considerably enlarged on account of the remarkable progress made in the development of oil engines in recent years. Rearrangement of the contents has been made and many branches included which did not appear in the former treatise.

The original book has been divided into two separately published parts. Part I, devoted to high compression engines, forms the volume under present consideration. The first section includes the historical development, design, construction, testing, installation, operation and repair of these engines. This is followed by two chapters describing various designs of two-cycle and four-cycle engines. Many useful tables are included in the contents. The whole is indexed and cross-indexed in a complete and thorough manner so as to form a convenient handbook for designers, constructors and users of oil engines.

**Herman Melville, Mariner and Mystic,** by Raymond M. Weaver; 399 pages, 20 illustrations, bound in blue buckram with gold stampings; published by George H. Doran Company, New York.

Mr. Weaver has written an excellent biography of the man who in a literary sense, discovered the South Seas. It is surprisingly good when the reader considers the fact that Melville has been dead for more than thirty years and that the author, therefore, lacked the priceless advantage of a personal acquaintance and was compelled to gather his materials and impressions at second hand. The book will be welcomed by those who have known of Melville for some time; they will find in it an answer to the hitherto unanswered question: What manner of man was he? and those individuals who are about to read Melville because he gives promise of becoming fashionable for the next few months, also may find both pleasure and profit. That is to say, the book is undeniably timely. Its future probably will depend in large part on the future of Melville, who may be taking his proper place in literature, although the very vigor and spontaneity of his recrudescence spell breakers ahead. He may be dropped next year for the latest sex novelist or the expounder of a new esoteric creed.

Mr. Weaver would have written a better book and commended himself more to the reader if he had manifested a kindlier spirit. He appears to write in a sort of rage, and when he takes a dislike to some character the results are disastrous. When he says of Melville's mother, for example, that "she condescended eight times to motherhood," the reader is left to wonder whether Melville's mother possibly could have merited such language or whether Mr. Weaver's satire has impaired his good taste. At any rate, in a book that does not aim at holding up Mrs. Melville to ridicule, such a phrase is unpardonable.

**A Book of the Sea,** selected and arranged by Lady Sybil Scott; 465 pages, bound in blue cloth with gold stampings; published by the Oxford University Press, Oxford, England.

The compilation of an anthology is likely to be more or less of a thankless task, for after one has read voluminously and selected carefully, he is more than likely to discover that he has failed to please even a scant half of his readers. One person misses a favorite or two and rails at the author; another objects because the anthology contains too much verse, which happens to be his own particular aversion; and thus the tale runs.

This is merely equivalent to saying that no anthology can be perfect. Naturally, therefore, Lady Sybil Scott's collection misses perfection. It is, nevertheless, a desirable addition to any library, largely because it contains much that is eminently worth-while but that is likely to escape the casual reader. On the other hand, those who swear by such verse as The Rhyme of the Three Sealers and McAndrew's Hymn, to mention only two of Kipling's; who love the more or less lawless swing that a setting east of Suez gives to things, will be disappointed, even though they may gain for the first time an introduction to Andrew Lang's splendid prose translation of the Odyssey and such verse as Sir Henry Newbolt's "Drake's Drum."

**Black Bartlemy's Treasure,** by Jeffery Farnol; 368 pages, bound in blue cloth with gold stampings; published by Little, Brown & Company, Boston.

A gentleman named William Makepeace Thackeray set the fashion, in a book entitled Henry Esmond, of writing in the speech and style of a dead time. He has had many imitators but no successors. Mr. Farnol's book, that is to say, though couched in the Esmond manner, has a multitude of the faults of an archaic style. But Mr. Farnol is an artist and makes his books abound in well-done incident and his own peculiar atmosphere.

**The Great Quest,** by Charles Boardman Hawes; 359 pages, bound in orange cloth with black stampings; published by The Atlantic Monthly Press, Boston.

A sea story of New England, Africa and the River Plate. The time, ninety-six years ago. The book ends with a shipwreck that lacks a bit of ringing true, although it contains the rough outlines of some good scenes.

**Kit Musgrave's Luck,** by Harold Bindloss; 284 pages, bound in blue cloth with gold stampings; published by Frederick A. Stokes Company, New York.

A list on the cover gives the names of thirty-six books by the same author. Homer wrote two.

**Ocean Research and the Great Fisheries,** by G. C. L. Howell, 220 pages with numerous illustrations and charts, bound in blue cloth with gold stampings; published by Oxford University Press, Oxford, England.

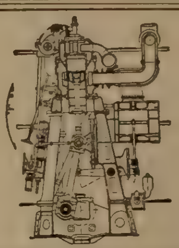
The title describes this book: it is devoted to a discussion of the principal fish considered as sources of food supply, with perhaps too much reference to British and Northern European conditions for it to be altogether pertinent elsewhere. But, of course, what Mr. Howell has to say of the life-histories and habits of fish is practically universal in its application. He has founded his work on more compendious efforts by others, and brings what is evidently a wide personal knowledge. He is acting secretary of the British Fisheries Society and formerly director of fisheries, Panjab.

Reports from Japan say that the Nippon Yusen Kaisha is planning the incorporation of the Nippon Kisen Kaisha, capitalized at yen 25,000,000, to operate the N. Y. K. coasting services, in order that the parent company could turn its undivided attention to offshore trades.

* * *

Japanese shipowners believe that the British government may postpone to August 1 the enforcement of the law requiring vessels entering British ports to be equipped with wireless; but even if postponement should be granted, some vessels may be unable to obtain equipment in time.

# Oil Engines and Motorships



## STEAM AND DIESEL DRIVE

By J. E. P. GRANT

Chief Engineer Merchant Shipbuilding Corporation, Chester, Pennsylvania

**Mr. Grant was born in England. He received his early education in the national schools and later graduated from Hull Technical College in 1902. Soon after Mr. Grant began his apprenticeship in the Messrs. Earle Shipbuilding & Engineering Company at Hull. After serving seven years with this company, he came to America and was employed for a time with the New York Shipbuilding Company. He then went to the Pacific Coast with the Seattle Construction & Dry Dock Company, and later with the Union Iron Works, San Francisco.**

**Since May, 1917, as chief engineer of the Merchant Shipbuilding Corporation, Mr. Grant has been in charge of the designing and arrangement of the machinery of the seventy ships built at the Harriman and Chester yards; two wooden tugboats, two combination passenger and freight vessels, four oil tankers and a fireboat built for private owners.**

**Mr. Grant is a member of the American Society of Naval Architects and Marine Engineers, and has written several technical articles on types of ship propulsion.**

WHILE there is no particular type of propelling machinery best for all kinds of ships, yet certain types of propulsion may be recommended according to the trade in which the ships will be engaged, which will decide the size of the ship needed, the speed and length of the voyage.

Very recently the Diesel engine has come to the fore with a vengeance, and no prospective ship owner requiring power up to, say, four thousand I. H. P. can afford to overlook its possibilities. The fuel oil consumption per horsepower is about one-third that of a steam engine, either reciprocating, turbine or electric. The room necessary is no more than that for a regular steam installation. In addition to the saving of fuel oil consumption, there is a considerable saving in cargo space and weight over long voyages; i. e., on two similar ships, one Diesel and one steam, in a trade where the fuel oil requirements are 1500 tons for steam, only 500 tons would be required for Diesel, a net saving of 1000 tons. For long voyages there is no doubt but what the Diesel engine has arrived and will do more than any other single factor to reduce the cost of operation.

The selection between steam and Diesel drive depends almost entirely on the respective initial cost of these installations. One of the factors charged to operating costs is "fixed charges," which is working 24 hours a day whether a ship is tied up or running. Diesel engine prices in the United States are very high yet, and this, of course, decreases the range of desirability of this type of engine.

Where to draw the line between steam and Diesel drive requires special study of the particular trade in view, but, generally speaking, I would say that for power up to 4500 (Diesel) I. H. P. and for voyages of 4000 miles and over, the Diesel engine is preferable, and that for above the power mentioned and below the 4000 miles steam should be selected. The minimum distance of voyage mentioned above will decrease as the costs of Diesel engines come down.

Should it be decided that we are to have a merchant marine in keeping with our importance in world affairs, it looks as though American firms are in a particularly advantageous position with regard to type of propelling equipment in that they are not loaded up with a lot of obsolete steam engine driven ships. These remarks do not in any way apply to tankers, as the trade is entirely different, in that a boiler is necessary at all times to get steam for heating the cargo oil and the saving claimed for the Diesel engine in regard to fuel oil consumption is to a great extent minimized by ability to obtain fuel oil at a very low price. Therefore, saving in fuel oil on a tanker does not mean the same in dollars and cents that the same amount of saving would mean on a ship which was not trading to the oil fields.

Electric cargo-handling machinery is now with us and while it costs a good deal more than steam-driven machinery, it is so much more economical in operation as to justify its adoption in most cases. Unfortunately the trade that is best suited for Diesel engine drive is not the best suited to electric deck machinery, because to make comparison between the two favorable to the electric winch, it is necessary to use the deck machinery very often, and the long-voyage trade that shows up the Diesel engine to advantage does not permit the opportunity to operate the cargo winches to the same extent as a short-voyage trade.

Editorial Note:—It is interesting to note in connection with Mr. Grant's arguments on the limitations of the marine Diesel engine in America that in Europe, where Diesel engine manufacture has become more of a standardized quantity-production problem, the shipowner is rapidly beginning to utilize the Diesel for medium-size coasting freighters. Such an installation is described in the article entitled "A Handy Cargo Motorship," on page 287 of this issue.

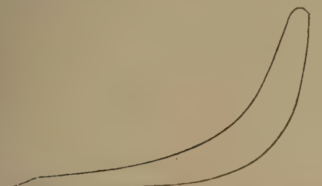
# FUEL INTRODUCTION SYSTEMS FOR INTERNAL COMBUSTION ENGINES

ENGINES using the accumulator type of fuel injection regulate the amount of fuel to be injected by the lift of the needle valve and demand very exact timing; often it is also necessary not only to retard the injection, but also reduce the fuel pressure to about half when working under light load or idling.

With direct pump injection considerable progress has been made on small engines and much development work has been done on the Pacific Coast. With this system the timing is also very important, and in order to obtain high pressures the area of the nozzle opening must be very small. Using such high pressures as are necessary with this system, even the smallest amount of air in line or pump may cause after-tripping—that is, after the injection is completed by the pump the expanding air forces some fuel through the nozzle opening, which collects then in drops at the nozzle openings and carbonizes. To avoid this difficulty, an automatic valve must be placed as close to the nozzle as possible.

### Air Injection

As can be seen from the foregoing, it is a very difficult matter to obtain the necessary fine atomization with mechanical means only; this especially for heavy fuels. But the problem was solved as soon as Diesel decided to use highly compressed air for this purpose. Figure 4 shows the fuel valve as developed by Doctor Diesel in connection with air injection, and it is of a type which is still in use. It consists of a so-called atomized and a needle valve. The atomizer is built up of circular plates which are held apart by distance rings. Below these plates, which are perforated, is a slotted cone. The fuel is delivered by the pump on top of the first atomizer plate, from which it drops down upon the lower plates and thus divides itself over the atomizer. Above the plates we have compressed air, and as soon as the needle valve is opened the air blows the fuel through the holes in the atomizer plates and the slots in the cone and through the nozzle plate into the cylinder. For the reason of safety, the temperature of the injection air must be low. It is further necessary to keep the pressure of the injection air always above the compression pressure in the cylinder so as to prevent the latter from entering the valve and causing ignition of the fuel in the valve, or preventing same from entering the cylinder. This has happened already on stationary engines, and as the engine simply slowed down but kept going for a while on account of the flywheel effect, the governor called for a maximum fuel delivery and the fuel valve filled itself with fuel. If the operator now noticed what had taken place he naturally would increase the injection air pressure, with the result that all the fuel which had been collected in the fuel valve would be injected into the cylinder and cause the engine to run away.



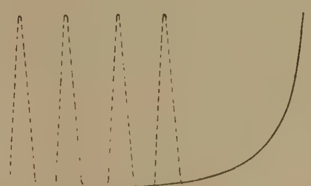


Fig. 7 at left shows a normal indicator diagram for two-cycle engine.
Fig. 8 at right shows a compression diagram with fuel and air shut off.

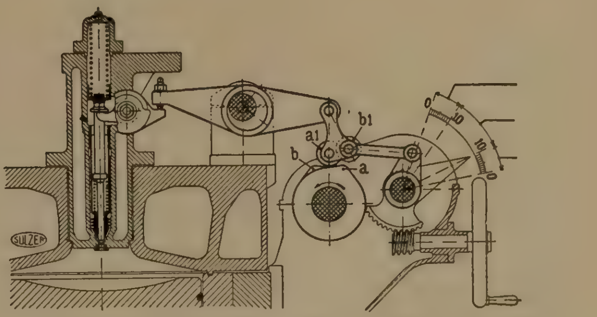


Fig. 6.—Sectional drawing showing reversing mechanism and fuel control, Busch-Sulzer Diesel engine.

The pressure of the injection air must be varied somewhat according to load conditions and ranges from 600 to 1200 pounds per square inch. The air is compressed and furnished by a multi-stage, mostly three-stage, compressor integral with the engine. The air is cooled after each stage and is cold when reaching the fuel valve. This cold injection air when expanding into the lower pressure existing in the working cylinder has a decided cooling effect on the charge which, as we will presently see, can be of considerable disadvantage.

This cooling, together with the cooling from the necessary gasification of the entering fuel, tends to lower the temperature in the cylinder below the ignition temperature of the fuel and misfiring results, especially with heavy fuel oils. A higher compression with resulting higer temperature could be used to overcome this disadvantage, but this is not desirable for constructural and other reasons.

To insure proper combustion without resorting to an increase in compression, a small quantity of fuel was deposited at the bottom of the fuel valve, as shown in Figure 5.

The beneficent effect of this ignition fuel can be increased if a lighter fuel is used for this purpose, or if the same fuel be highly preheated, which is possible if a valve construction is used which prevents this fuel from contact with the injection air, though the first method—using a lighter grade fuel—is preferable. In either case a separate fuel pump becomes necessary, which delivers the ignition fuel to the bottom of the fuel needle. This pump is designed for constant stroke and the amount delivered before each period of ignition is about 10 per cent of the fuel required for full load conditions. With this system it was possible to use very low grade fuels, such as tar oils, even in high-speed four-cycle engines.

Under low load conditions it is further important that not too much injection air enter the cylinder, and for close regulation the changing of fuel delivery according to load conditions is not alone sufficient, but it is also necessary to change the quantity of injection air admitted to the cylinder. This can be accomplished in several ways: varying the needle valve lift, the length of injection period. For marine engines this is of special importance, as with a change in load there is also a resulting change in speed.

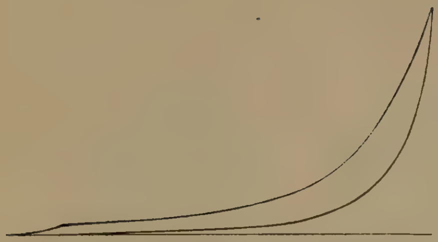


**Fig. 9.**—A light load diagram characteristic of those which are used for determining adjustments on fuel pumps.

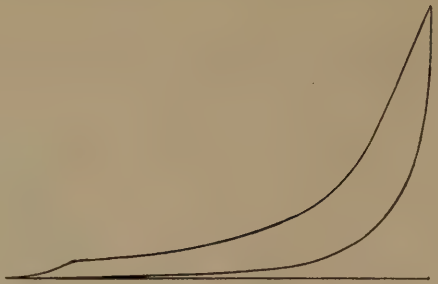


**Fig. 10.**—Early ignition. This diagram may show either too high injection air pressure, too small clearance between roller and cam, or change in fuel.

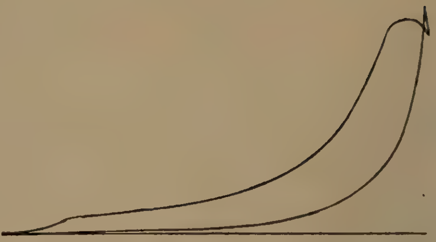


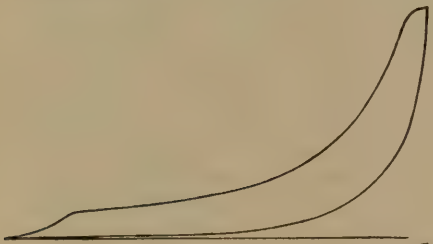
**Fig. 11.**—Late ignition diagram. Caused by low pressure on injection air, clogging of atomizer, worn camshaft gears, or too much clearance between cam and roller.

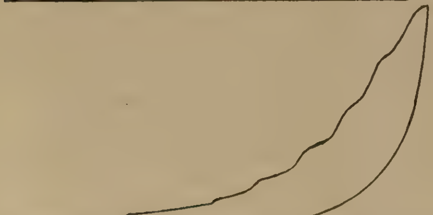
Under light load conditions at reduced speed, the length of time during which the fuel valve is open increases, and at half speed it is twice as long as at normal engine speed. At the same time the fuel consumption is greatly reduced, and if the valve areas are kept the same, an increased quantity of injection air passes through the fuel valve into the cylinder. This results in a large injection air consumption, and if the compressor is integral with the engine and running consequently at the same speed, it can hardly supply the necessary quantity of air unless it is very amply designed.

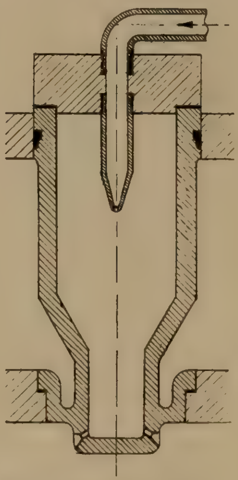
Constructions for a regulation of fuel valve lift must be designed in a way so as to keep the point of opening practically constant, varying only the lift and time of closing. Figure 6 illustrates the Busch-Sulzer design of injection air regulation. With this construction the roller clearance is increased by moving it towards minimum lift, as indicated, but as this is towards the oncoming cam a practically constant point of opening is obtained with properly designed cam nose.

With above construction close regulation is possible at reduced loads and speeds, without danger of misfiring on any of the cylinders. This is as valuable for stationary installations as for marine, for it makes idling possible without misfiring. These problems of regulation, which are really problems of mixture, atomization and combustion, are very attractive to the designer, and several types of atomizers have been developed. Some overcome one difficulty by getting into another; others do not give the same facility of adjustment to different fuels as does the plate atomizer.

The influence of timing and of the atomizer is illustrated to some extent in the diagrams reproduced herewith.







Upper left, **Fig. 12.**—Retarded combustion diagram. Caused by clogging of nozzle, throttling in atomizer, or smallness of nozzle opening.

Lower left, **Fig. 13.**—Diagram showing irregular expansion; large irregularities probably caused by leaky or slow fuel valve; small irregularities probably due to binding of indicator piston.

At right, **Fig. 14.**—Illustrating method of fuel injection used in many engines of the hot-bulb type.

Before taking indicator diagrams, great care must be taken to make sure that the passage to indicator cock is free and cock and indicator in proper condition. There are, of course, a great many other variations one can get in indicator diagrams, but those illustrated are sufficient to cover some of the common occurrences.

Before closing this discussion of injection systems, one cannot overlook some of the latest schemes which have made their appearance under various names, mostly but wrongly called solid injection.

When analyzing the hot bulb type it was mentioned that improvements have been made in this type, built on the experience gained in Diesel engine practice.

The basic idea of this new type is represented in the Steinbecker engine. This is an engine using the high compression of the Diesel type. Some builders go as high as 520 pounds and the system of fuel injection is illustrated in Figure 14.

In the cylinder head there is a small pre-combustion chamber, which is in constant communication with the cylinder. The fuel is injected into this chamber by a pump during the compression stroke and, meeting with the entering hot compression air, part of it is gasified and partial combustion takes place, the force of which will expel the remaining fuel and gases through the small hole or holes at the bottom of the cup into the cylinder, where final combustion takes place.

The relation of this type of engine to the former hot bulb can be readily seen. The efficiency is in this type greatly improved and has reached that of the Diesel, but the control of ignition is not absolute and this, of course, is a vital item in high compression engines.

This type of engine is now manufactured by a number of concerns with small variations in design and no doubt has great possibilities, but before it can be adopted for larger size engines means for absolute control of time of ignition and combustion must be obtained. There is, of course, still much left to be said in order to do justice to all the different efforts towards improvements on internal combustion engines, from the standpoint under consideration, but the above will give some idea of the problems that had to be overcome.

In conclusion, we find that the advantages of the high compression engine had to be obtained by sacrificing a good fuel and air mixture, as this process can only take place after completion of the compression stroke and in a very short time. But the disadvantage of this has been overcome by working with a large surplus of air (50 per cent) and with the benefit of the high temperature in the combustion chamber insuring ignition in every part of it.

The result is that we have today a highly economical heavy oil engine ideal for marine work, and it is hoped that this engine type will find due consideration.

# A HANDY CARGO MOTORSHIP

## New Norwegian Coasting Vessel of 1400 Tons Deadweight Capacity on 14 foot 5½ Inch Draft, Fitted with Long-Stroke, Slow-Speed, 1000 I. H. P., Four-Cycle Diesel Engine, Direct-Connected to Single Screw

The Norwegian motorship Balzac on her trial run

A GOOD type of small cargo boat is the motorship Balzac, the first of two ships built to the order of the well known Norwegian motorship owners, Fred Olsen & Company, Christiania, Norway. The ship was built under the special survey of the Norwegian Veritas to fulfill the requirements for that society's highest class. The hull was constructed by Odense Staalskibsvaert, Odense, and the machinery installed at the same yard, but built and delivered by Burmeister & Wain, Copenhagen.

### General Design

The motorship Balzac was built as a well-deck vessel with connected bridge house and poop and also provided with forecastle. She has two masts and two kingposts. The machinery is fitted aft, this being the most practical arrangement for a ship of this size.

A double bottom is fitted from the aft peak bulkhead to the fore peak bulkhead, being oil-tight and arranged for carrying fuel oil and having a total capacity of 311.5 tons.

The main particulars of the vessel are as follows:

| | |
|---|---|
| Type of ship | Single screw cargo vessel |
| Length b. p. | 215′ |
| Breadth, molded | 34′ 6″ |
| Depth | 15′ |
| Draft, loaded | 14′ 5½″ |
| Displacement, loaded | 2275 tons |
| Deadweight capacity, abt. | 1420 tons |
| Total capacity of fuel (22° B.), abt. | 311.5 tons |
| Water ballast in peak tanks, abt. | 69.5 tons |
| Normal average speed at sea | 10.5 knots |

For rapid handling of the cargo, two large hatches are provided, each served by two three-ton derricks and for each derrick is installed an electrically driven three-ton winch. The winches for the after hatch are placed directly on the deck, while the winches for forward hatch are placed one on the forecastle and the other on an elevated platform.

The windlass and the steering engine are also elec-

At left, starboard side of Balzac's engine room looking forward. Center, view showing top of main engine. Right, the auxiliary generating set with Burmeister & Wain single cylinder engine.

trically driven as well as a warping capstan placed on the after deck.

The captain and the navigation officers are accommodated in the bridge, the saloon also being situated here as well as a passenger room and the pantry. The engineers' quarters are located in the poop and the crew also are berthed here in rooms fitted up to accommodate two men each. Separate messes are found for the officers, engine crew and deck crew. In a house formed by the extension of the engine casing is provided room for the hospital, galley, washing rooms for the crew as well as rooms for the engine and deck stores.

### Propelling Machinery

The propelling machinery consists of one 6-cylinder direct reversible long stroke Diesel engine, built by Burmeister & Wain, Ltd., Copenhagen, and specially designed for use in small cargo vessels. The cylinder diameter is 500 m.m., the stroke 900 m.m., and at 125 revolutions per minute the engine develops 1000 i. h. p. on a normal daily consumption of 3.1 tons of fuel oil.

The stroke is made extra long in relation to the diameter of the cylinders in order to reduce the revolutions, so that the engine can be employed as a single-screw engine and allow of a propeller of large diameter being fitted, thereby insuring good propeller efficiency and good maneuvering ability.

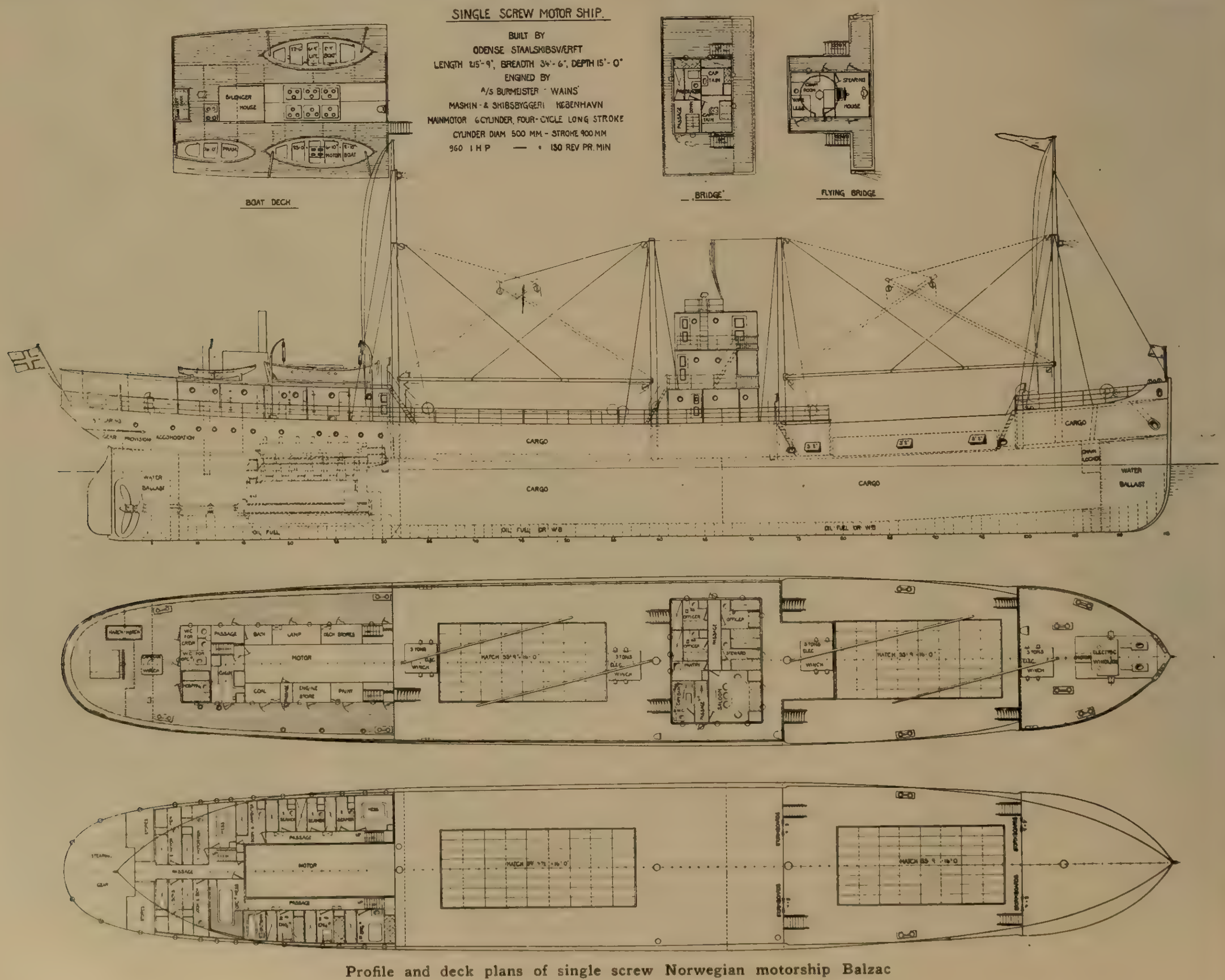
### Features of Design

The characteristic feature in the design of this new type of motor is lightness combined with strength. All parts of the engine which are subjected to great stresses are heavily built, while all parts which do not partake in the strength factor of the engine are of light construction.

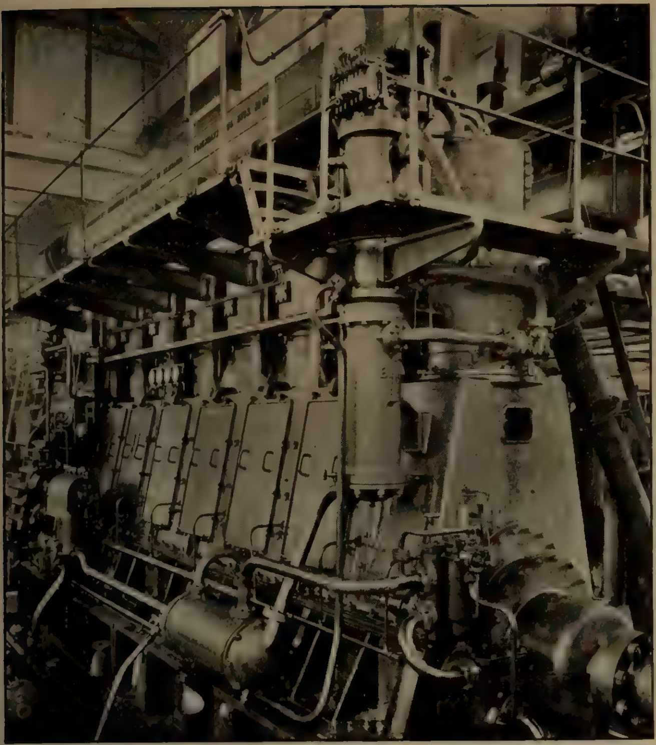
The cylinder covers are bolted together in such a manner that they form a rigid and substantial connection at the top of the engine, and long through stay bolts from the covers are carried down through the columns to the main bearings in the bedplate. The cast iron columns are thereby released from all tensile stresses and only require to be made rigid enough to withstand the side thrust from the pistons and the compression stresses resulting from the tightening up of the through stay bolts. The cylinder liners are bolted to the underside of the cylinder covers and are fitted with independent water jackets; these liners and water jackets, which on account of the extra long stroke of the engine are comparatively long, do not transmit any thrust from the columns, and can therefore have their walls turned smooth and have a gradual reduction in thickness towards the bottom ends, according to the pressure in the cylinder.

The engine, like all others of Burmeister & Wain's make, is forced lubricated. The crankshafts and connecting rods are enclosed oil-tight, large doors being fitted to give access for inspection and overhaul. The pistons and connecting rods can be lowered into the oil-tight housing and taken out through these doors.

The engine is designed with its center of gravity well towards the forward end, this being an advan-



Profile and deck plans of single screw Norwegian motorship Balzac



After end of 1000 i. h. p. slow-speed, long-stroke, Burmeister & Wain Diesel, as fitted on motorship Balzac

tage in smaller ships having their machinery placed aft, where the trim of the vessel in light condition is generally excessive. The air pump, which is much lighter than one of the motor cylinders, has consequently been placed at the after end of the engine, while the fly-wheel, the gear for working the camshaft, and also the pumps, are fitted at the forward end of the engine.

The various pumps comprise one two-cylinder cooling water pump, one single cylinder bilge pump, and one single cylinder daily service pump, all the pumps being driven from a common crankshaft operated through gears from the main crankshaft of the engine. The gears are enclosed oil-tight and under forced lubrication. The main engine is fitted with six fuel oil pumps, one for each cylinder, and with a governor of Burmeister & Wain's type. A thrust bearing of Burmeister & Wain's special two-collar forced lubrication type is built into the after end of the bedplate, and the stern tube is fitted with Cederwalls stuffing box. The starting and reversing gear is fitted at the fore end of the engine. Alongside the cylinders a water-cooled manifold for the exhaust gases is fitted; this manifold also acts as first silencer, a second silencer being placed vertically inside the funnel.

### Auxiliary Power Plant

There are two single-cylinder Diesel engines of Burmeister & Wain's enclosed and forced lubricated auxiliary Diesel-generator type, built especially for auxiliary work in smaller ships. Built together with these engines are the air compressors which supply the necessary compressed air for the maneuvering of the main engine, and can also be used as a stand-by for the main engine air compressor. A 30-kilowatt, 220-volt dynamo is coupled to each auxiliary engine for operating the electric winches, electric windlass and electric light installation.

The auxiliary machinery in the engine room consists only of a ballast pump, a bilge and sanitary pump, both electrically driven, a hand-driven emergency air compressor and a motor generator for transforming the 220 volts current down to 110 volts for lighting purposes. For heating purpose and also for fire extinguishing in holds, a small donkey boiler is provided. The engine room is provided with a workshop with lathe and drill press.

The trial trip of the Balzac was carried out December 10, 1921, in the Sound, and the results were:

| | |
|---|---|
| Draft, average | 8′ 2″ |
| Displacement | 1210 |
| Indicated horsepower, average | 1040.8 |
| Revolutions per minute, average | 132.7 |
| Speed, average | 11.2 |

During the consumption test the main engine developed 1048 i. h. p. at 133 revolutions per minute at a fuel oil consumption of 0.1303 gram of 0.2895 pounds per i. h. p., lower heating value being 10,188 kg. cal. or 18,340 b. t. u.

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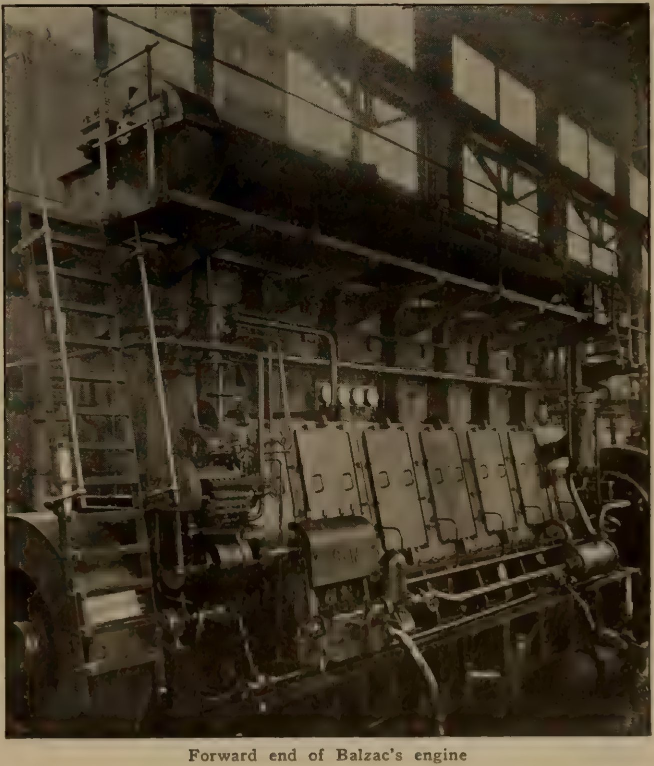
## CURED BY ADVERTISING

ADVERTISING during periods of lessened demand has proved to be one of the chief means of reducing seasonal unemployment, today a most serious handicap to American industry. Hundreds of thousands of men are laid off annually in the various trades because the sale of goods which they produce is limited to certain months.

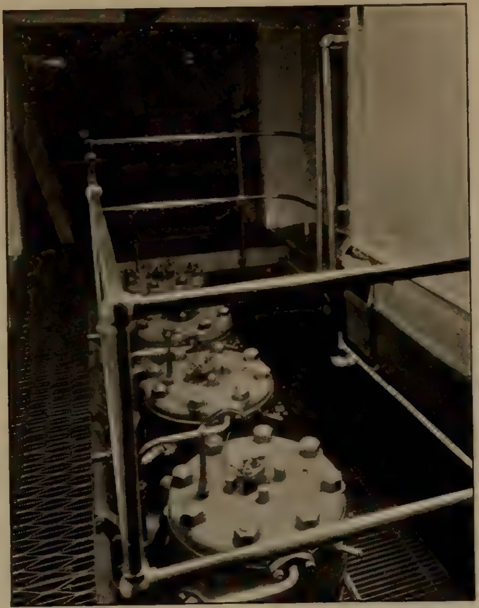
The President's Conference on Unemployment, in its efforts to formulate plans for reducing nation-wide joblessness, has found American resourcefulness already mitigating this evil. Inquiries have brought to light, for example, that one New York company, which does a large business in dried fruits, by advertising to the consumer has lengthened the season for eating its products.

A Cleveland firm manufacturing men's clothing, in which the styles fluctuate by seasons, has kept up continuous production by standardizing its products and advertising inducements to retailers for accepting deliveries over an extended period, instead of only at the opening of the season.



Forward end of Balzac's engine

# MOTOR-DRIVEN DERRICK LIGHTER



Engine room hatch of the Worthington, looking forward. Note the simplicity of the heads of the cylinders of this engine.

THE Worthington is a self-propelled single-screw Diesel-engine-driven derrick lighter built to the order of the Worthington Pump & Machinery Corporation to take the place of their steam derrick Daniel Wheeler, used for handling the company's products in New York harbor and vicinity.

The hull is of wood, length 133 feet, beam 35 feet, loaded draft 10 feet, gross tonnage 333, net tonnage 225, and is of unusually heavy construction to withstand the hard usage incident to service around the docks and harbor shipping. The hull is full-bodied in order to provide the necessary stability for operating the cargo derrick at long radii. An "A" frame derrick of 20 tons lifting capacity, of steel lattice work construction, is mounted abaft the mipship line with a back leg extending to within a few feet of the stern.

In the space between the derrick "A" frame and the back leg is located the deck house, containing living quarters for the crew, operating room for controlling the derrick, and the pilot house. From the "A" frame to the stern of the boat is clear deck space for cargo stowage. On boats of this type it is customary to carry all cargo on deck, but on this vessel a large main deck hatch is provided so that perishable freight can be stowed in the hold if it should be necessary to keep it on board for any great length of time.

### Engines

The engine room is located in the stern and contains the main propelling engine, the auxiliary generating engine for supplying current to the derrick motor, auxiliaries and electric lights, the emergency lighting set, auxiliary air compressor, auxiliary lubricating oil circulating pump, auxiliary cooling water circulating pump, oil cooler, hot water heating boiler and starting air tanks.

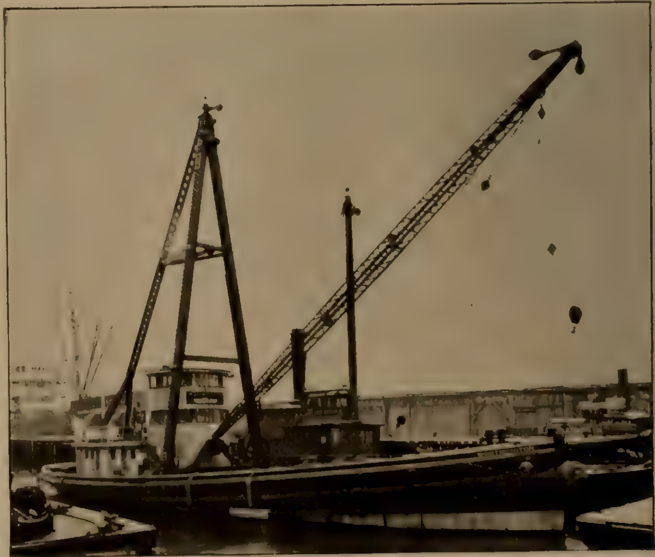
The main engine is a Worthington two-cycle, solid-injection, four-cylinder Diesel, with cylinders 15¼ inches diameter by 16 inches stroke, developing 300 B. H. P. at 275 R. P. M. All of the control gear and fuel pumps are included in a sub-assembly at the forward end of the engine. On the after end, just abaft the flywheel, is another sub-assembly, consisting of a lubricating oil circulating pump, cooling water circulating pump, starting air compressor, and mechanical cylinder lubricators, all driven from one eccentric. Attached to the aft end of the engine bed is an S. K. F. ball thrust bearing.

On the starboard side, forward, is an auxiliary set consisting of a Worthington two-cycle, solid-injection, two-cylinder Diesel engine of 50 horsepower direct connected to a G. E. 38-K. W., D. C. generator delivering current at 220 volts. A cooling water circulating pump, a bilge pump and a lubricating oil circulating pump are attached to this engine. This set supplies current for operating the derrick engine, the auxiliary air compressor, auxiliary pump, and electric lights.

For pumping up starting air when the main engine compressor is not in operation, a Blake & Knowles (manufactured by the Worthington company) two-stage, motor-driven compressor is provided. This compressor is provided with a Cutler-Hammer automatic starter, which can be set to maintain the air in the starting air reservoirs at any desired pressure, a combined pressure gauge and electric switch making contact and closing the starting circuit to the air compressor motor when the air pressure in the tanks falls to the desired minimum and breaking contact when full pressure is reached. As long as the main attached compressor keeps the pressure in the starting air tanks between 250 and 350 pounds the auxiliary compressor does not operate, but if engine maneuvers are made so frequently that the attached compressor cannot keep up the supply and the pressure falls to 250 pounds, the starter gauge closes the circuit, the auxiliary compressor starts without attention from the engineer and keeps running until the air pressure reaches 350 pounds, when the starter gauge opens the circuit and the auxiliary compressor stops.

For emergency use, if the lubricating oil pump on either the main or auxiliary engine stops working, a motor-driven rotary oil pump is provided. For emergency cooling water circulation a Worthington 2-inch volute, centrifugal, motor-driven pump is provided. This pump has a connection to the bilge and can also be used to supply water to the fire hydrants on deck.

A Griscom-Russell vertical oil cooler is located in a very accessible position on the port side of the main engine and is so connected that it may be used to cool the bearing lubricating oil, or in cold weather, if the oil is too stiff for proper circulation, the hot



View of the derrick lighter Worthington, showing arrangement of "A" frame and derrick boom. The height of "A" frame is 70 feet, length of boom 90 feet.

jacket water from the engine may be circulated through the cooler and the oil heated.

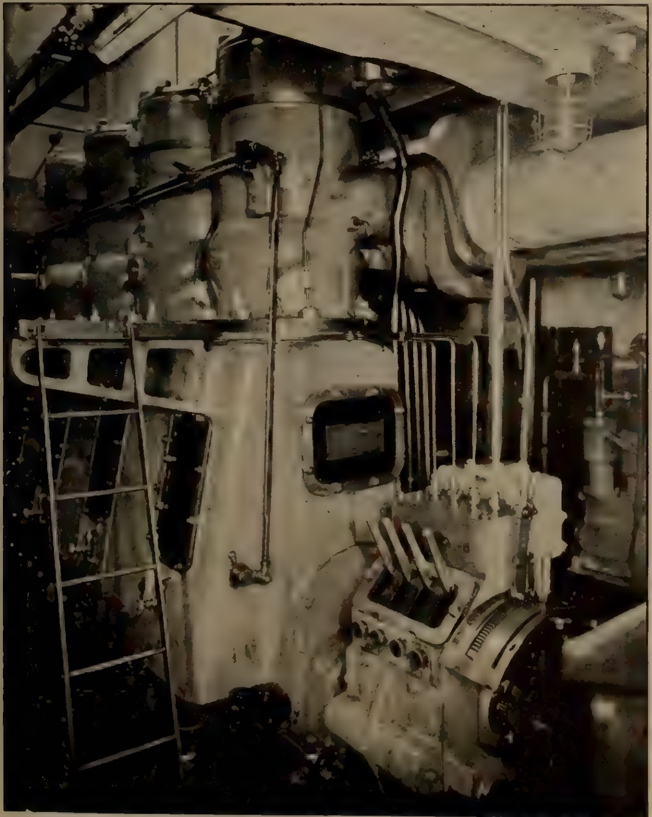
### Electric Light

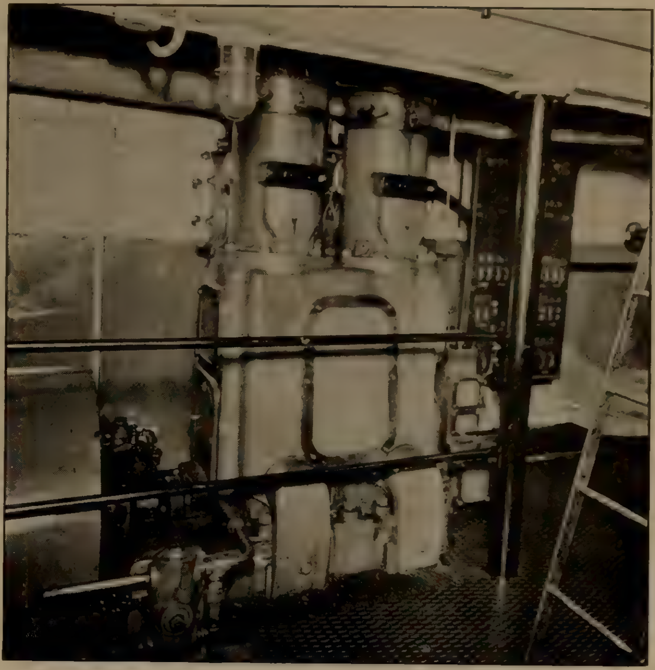
For supplying current for lighting the boat or operating any of the auxiliary pumps when the 50-horsepower auxiliary set is shut down, a Cummins oil engine of 7 horsepower is provided, connected to a 6-kilowatt Triumph D. C. generator. This engine operates on the Hvid principle, burns the same fuel as the main engine, and can be started by hand. If for any reason all the starting air should be lost, so that the 50-horsepower auxiliary engine cannot be started, this small set can be started by hand and will supply power enough to operate the auxiliary air compressor and pump up the starting air.

Starting air at 350 pounds pressure is stored in six cylindrical tanks of about 20 cubic feet capacity each, located in the extreme aft end of the engine room. This greatly exceeds the air requirements for the engine, but the owners of the boat wished to be on the safe side and insure the boat against loss of maneuvering power in situations where very complicated maneuvers are required around crowded docks or among harbor shipping. In service it has been found that for normal operation two of these tanks are ample.

Air at about 100 pounds pressure for operating the whistle is stored in a tank that is a duplicate of the starting air tanks. Air is supplied to it through a reducing valve from the starting air reservoir. This tank was made of the same strength as the starting air tanks as a safety precaution in case the reducing valve should get out of order and permit full pressure of air to enter the tank.

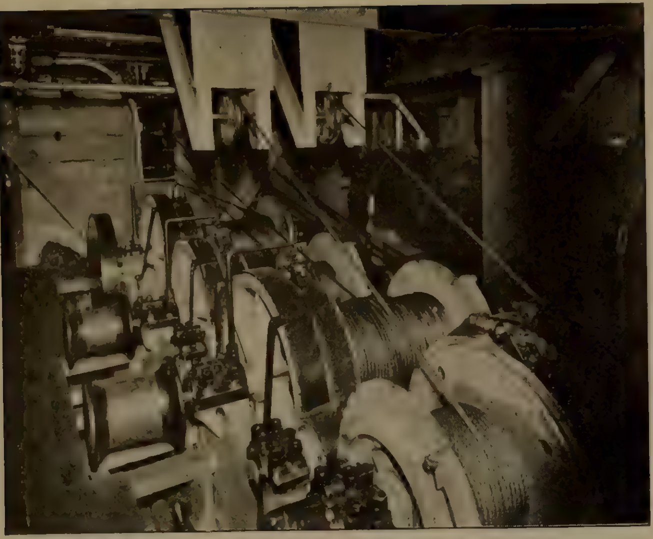
In place of the conventional type of air whistle, which is notoriously ineffective as a sound producer, and very extravagant in its use of air, the Worthington carries on top of the pilot house a Strombos duplex sound signal. This is a most effective sound device, producing a very pleasing organ note, audible over long distances and requiring so little air that it is operated from a ¼-inch pipe.


Starboard side of Worthington's engine showing control stand


Worthington 50-horsepower direct-connected Diesel generating set

The fuel supply is carried in two cylindrical steel tanks, of four tons capacity each, located outboard, one on each side in the hoisting engine compartment just forward of the engine room. At the main deck level in the engine room entrance, just above the main engine, are located two daily service tanks, each of sufficient capacity to operate the main engine continuously for six hours. A small pump driven from the crankshaft of the 50-horsepower engine transfers oil from the main tanks to the service tanks, and a hand-operated oil pump is provided as a standby. On the port side just forward of the fuel tank is a fresh water storage tank, while in a corresponding position on the starboard side is the lubricating oil storage tank. In a compartment just forward of the engine room is located the hoisting engine for operating the derrick. This is a five-drum machine driven by a 25-horsepower G. E. motor and built by the National Hoisting Engine Company. The wire cable from each drum is led by means of suitable pulleys to a point directly beneath the derrick, then up through the deck to its proper place on the derrick. By means of reach rods and bell cranks the controls for all drums are operated by a bank of levers located in a glass enclosed operating room directly beneath the pilot house. A controller of the trolley car type for controlling the hoisting engine motor is also located in this room.

At the level of the main deck in the deck house are two single and two double staterooms, one for the chief engineer, one for assistant engineer, one for deck hand and cook and one for two deck hands. At the after end of the deck house on the port side is the galley, opening into the mess room on the starboard side. On the second deck in the deck house are two staterooms, one for the captain and one for the mate. On the same level and just forward of these two staterooms is the derrick operating room. Above the operating room is the pilot house, handsomely finished in hardwood. The appointments and finish of all the living quarters are somewhat above the average practice in harbor work boats.



Electrically-operated hoisting engine controlling all movements of the derrick load

In addition to the usual fire-fighting equipment required by law, additional protection against oil fires is provided in the form of a Foamite Firefoam engine of 80 gallons capacity installed in the forward part of the engine room hatch with sufficient hose attached to reach any part of the boat. In case of fire this machine is put into operation simply by opening one valve and the 80 gallons of mixture will produce 700 gallons of fire-smothering foam under sufficient pressure to project it 50 feet from the hose nozzle. So effective is this apparatus for fiighting oil fires that a very material reduction in insurance rate is granted by the underwriters where it is installed.

For heating the boat an Arcola hot water system of the ordinary house-heating type is installed, the heating unit being located in the engine room. During the severe weather of the past winter this system proved so effective that it was found necessary to remove some of the radiators from the living quarters to reduce the heating effect.

For use in warping the vessel, pulling on lines, etc., a warping winch, driven by a 10-horsepower motor, is located inside the deck house in the forward end of the engine room hatch, with a through shaft extending outside the deck house on each side and a drum on each end of the shaft.

The Worthington was built by the Vinyard Shipbuilding Company at Milford, Delaware, from designs prepared by Eads Johnson, naval architect of New York City. In preparing the designs for this vessel the naval architect collaborated with the Worthington company's engineers with a view towards achieving the most successful adaptation of this new type of power equipment to the special conditions of the service in which the boat was to engage. The derrick was built and installed by the Terry Manufacturing Company, New York City.

It is worthy of comment that the boat was brought from the builder's yard to deep water in Delaware Bay through the shallow and tortuous water of Missapillion Creek under its own power, a trip requiring six days of almost constant maneuvering with the main engine. During this time the engine, although new and not run in, met all the requirements of rapidly repeated maneuvers in a completely satisfactory manner, after which the vessel completed a sea trip in severe winter weather to New York without the slightest interruption.

## NATIONAL MERCHANT MARINE ASSOCIATION

THE National Merchant Marine Association at its annual meeting in Washington, March 4, 1922, unanimously adopted the following resolutions, copies of which were endorsed and sent to the Senate Committee on Commerce and the House Committee on Merchant Marine:

**Resolved,** That we heartily approve and endorse the underlying principles embodied in President Harding's shipping message to Congress, and in the accompanying bill before the Senate and the House of Representatives, and that we call upon the country to uphold these principles as a firm foundation for a great and permanently prosperous American merchant marine.

**Resolved,** That in order that the farmers, manufacturers, and other producers of this country may be enabled to compete successfully in the markets of the world, we urge that all essential mail, passenger and cargo routes already established by the Shipping Board, or operated by private enterprises, be steadily maintained, to the end that all government-owned ships may be disposed of to private ownership as soon as practicable, and that proper encouragement be given to purchasers of "tramp" tonnage wherever necessary, especially in the world's seasonal trades.

**Resolved,** That we reaffirm our recommendation of a year ago, that in arranging for the transfer of routes and ships from government control to private purchasers, such transfers be made to companies selected wherever possible from the sections or ports which such routes are serving.

**Resolved,** That in accord with the principle of private ownership and control of merchant shipping established in the Merchant Marine Act of 1920, we record our disapproval of the effort to require the repair or reconditioning of Shipping Board merchant vessels in government yards, and recommend that such vessels be repaired or reconditioned in private shipyards, not only as a matter of economy, but also as a means of perpetuating a strong shipbuilding industry in the United States.

**Resolved,** That we commend the Shipping Board for its earnest efforts to readjust on an equitable basis the selling price of its ships, and also for the success which has attended its demand for a reasonable share of the carriage of Egyptian cotton in the direct and indirect trade to the United States, as well as for the insistence of the Board upon a participation of American vessels in the export of American cotton, and other American products.

**Resolved,** That we particularly approve the recognition in the Merchant Marine Bill of 1922 of the potential value of our sea-going officers and men by the provision for their enrollment, with suitable retainers, in the merchant marine naval reserve.

**Resolved,** That we felicitate the country on the organization of Merchant Marine Committees in inland communities, the loyal support which the President's program for the restoration of our merchant shipping is receiving from the representative press of the inland states, and the growing appreciation everywhere of the fact that a commercial delivery service of our own is vital to the development of the overseas trade of the American people.

Signed: T. F. Cunningham (chairman), H. F. Alexander, William Allen, Matthew Hale, Henry Hunter, J. T. Lykes, C. D. Mallory, Winthrop L. Marvin, L. W. Nicholson, Eugene E. O'Donnell, Malcolm Stewart, Stevenson Taylor, J. M. Whitsitt, committee on resolutions.

# GOVERNMENT AID—GOOD BUSINESS

## Chief of the American Bureau of Shipping Hails with Delight the Prospect of Protection for the American Ship Operator in Foreign Trade

By STEVENSON TAYLOR*

FOR over fifty years I have been closely associated in a business way with American ship construction, operation and classification. During that period I have regretfully witnessed the decline of our shipping engaged in the foreign trade. Our domestic shipping on the Great Lakes and on our coasts has, thanks to wise provisions of the law, prospered and kept pace with the requirements of the phenomenal business growth of our great country. Due to our God-given enormous natural resources, we have built up a nation in which have been established standards of living far superior to those of any other nation under the sun.

Emerging from a protracted period of our development where the majority of our citizens reaped their livelihood from industries which had to do with developments of our natural resources, we have gradually but substantially increased our manufacturing interests by the application of beneficial laws protecting infant industries during the period when they needed stimulation in order to compete with similar industries in other countries, where the inhabitants were accustomed to standards of living far below those obtaining in our great commonwealth.

We have prospered far beyond our most roseate dreams in many branches of manufacturing, so that today we find ourselves in a position where to continue our national prosperity we must export our surplus goods in order to maintain our American standards of living.

In order to sell our surplus products we must have our own means for delivering them to the consumers. Theorists may advance all manner of ideas concerning lines of least resistance and the flow of trade, but it is elementary common sense that he who would sell must be able to control deliveries, for we will never build up our foreign trade by using the facilities of our rivals, no matter how tempting the temporary offer of low cost service may be.

For many years we have witnessed efforts, most of them futile, to revivify our shipping in the foreign trade. The first essential was to obtain the ships, and that seemed to be the most difficult part of the task, for it meant an enormous investment of private capital, and such capital is seldom influenced by patriotic motives.

By the fortunes of war we now have the ships in abundance. With the addition of but comparatively few of special types we will have a fleet as well constructed and as well balanced as the fleet of any of our rivals. We have the goods to ship and the banking facilities for financing the trade in any part of the world. The only thing remaining for success is the means for overcoming the differential in costs of operation, due to no other reason than the same conditions which apply to every other American industry—the increased cost of maintaining American standards of living over the standards of the other nations with which we must compete. Foreign shipping to us, after a lapse of over half a century of inanition, is a new industry. It is now the one industry in the United States which needs protection by governmental means more than any other. Every other of our great industries had had governmental protection, a protection that has increased the cost of ships, and has a natural protection due to the geographical location of the United States; that is to say, the protection of at least 3000 miles of water on both sides of this continent; this natural protection varies with the cost of transportation to our shores. But our shipping in the foreign trade does not have even this geographical protection. Only three miles from our shores the ships of the world meet on an equality of opportunity. We cannot expect to maintain American standards of living on the seas and compete successfully with ships operated under the lesser standards of our competitors. It becomes, then, necessary for our government to see that American ships are given the same protection which our other basic industries have and should receive wherever economic conditions make it necessary. We, as Americans, are noted as being good business people. In fact, our faculties for gathering in money are used as terms of opprobrium by many of our jealous rivals. The aiding of our shipping as a means for encouraging our foreign trade resolves itself into a plain business proposition, and we should consider it as such, although the value of maintaining a merchant marine as a vital function of our national defense is one which must not be ignored.

As a business proposition the question presents the following aspects:

We must have our own delivery system if we are successfully to sell our excess products of field, mine and factory in markets open to world competition, a delivery that will protect our shipments against delays and against damage caused, as has been osserted, either by wilfulness or carelessness. If we do not dispose of all surplus products, our national business interests will not continue to be successful. Hence, if we treat our shipping in the foreign trade solely as a delivery system, it is worth whatever it may cost, when we consider the business of the entire nation.

If by the expenditure of $35,000,000, or whatever sum may be necessary to accomplish the end, we retain within our own borders the vast sums which must otherwise be spent in foreign shipyards and paid to foreign shipowners, we will accomplish a good stroke of business policy. I stand with a distinguished member of the government who last November said to me, "We must have a subsidy and that without synonyms," and let me go one step further, the granting of such subsidy should be in contractual form covering, say, at least ten years, that our old shipping people and our new "would be" shipping people—a class to be encouraged—should know upon what they can depend.

We have expended approximately the stupendous sum of $3,500,000,000 in the construction of our merchant fleet and the incidental expenses thereto, for war purposes. The war was successfully terminated largely because of this and similar expenditures on our part. We have the fleet on our hands today. As it cannot be profitably operated either by public or private control, under existing conditions, it is doubtful if we could sell the whole fleet for as much as $350,000,000 or one-tenth its cost. By a wise expen-

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* An address delivered at the National Merchant Marine Association convention, at Washington, D. C., on March 3, 1922.

# THE MARK TO SHOOT AT

By JOHN L. BOGERT

THE fundamental problem in freight transportation is this: What does it cost to move a ton a mile? Many years ago the late James J. Hill is reported to have said that with only 2700-ton steamers he was moving as much freight on the Great Lakes for one dollar as the best equipped railway in America could move the same distance for $26, and that with 6000-ton boats he could carry a ton of freight by water for less than one-fiftieth of what a railway must charge for the same work.

Long ago the 2700-ton steamer went into the discard on the Great Lakes, to be shortly joined by the 6000-tonner, which had given place to the 10,000-ton boat now being displaced by the 13,000-ton coal and ore carrier.

The railroads haven't stood still. The 40-pound rail gave place to the 60, then to the 80, and then to the 105. The American type of locomotive gave way to the Mogul, then to the Consolidation, and then to the articulated Mallet, while the freight car went from 30,000 pounds capacity to 100,000. These changes have had but one object in view: cutting down the cost of the ton-mile.

### One Ton—One Mile—½ Mill

What they have accomplished on the Great Lakes is this, that even in these days of high costs for everything, carrying coal up the Lakes and ore down, a ton can be carried 2000 miles for a dollar, or one mile for one-twentieth of a cent. The mark they have successfully shot at is half a mill a ton-mile. Just before the war, when coal for bunkers was half what it is now, coal had been carried for as little as one-quarter of a mill a ton-mile, and it is probable that in the not very distant future such a rate will again be made.

### American Competition

To those Americans who question the possibility of American-manned, American-owned and American-built ships ever competing with British ships for the ocean-carrying trade, I commend the thoughtful consideration of a few such facts as the following: In the matter of operating costs no British ship has ever carried coal as cheaply as American-designed, American-built, American-manned and American-operated ships carry it on the Great Lakes. What is done and has been done on the Great Lakes can be done on the Atlantic and Pacific, if only the same kind of brains is seriously applied to the solution of the problem.

Undoubtedly American labor costs will always be high, probably always higher than in Great Britain. Ship's crew cost is not by any means the whole story, nor is it the most important item. Recently Mr. W. A. Harriman, chairman of the United American Lines, declared that the wage cost of an American cargo vessel of 8000 deadweight tons was $800 per month more than the wage cost of a British ship of the same size.

### Motorships

Granting that there is a handicap to the American operator of at least $9000 per year for excess crew wages, this sum looks small alongside of the fuel-cost saving possible when the steam engines and boilers of the 8000 deadweight ton ship are replaced with Diesel engines. Assuming that both ships stay at sea 60 per cent of the time, there is a difference of from $30,000 to $40,000 in favor of the motorship in that one item of fuel cost. Nine thousand dollars doesn't look very important alongside of $30,000.

Unfortunately up to now the powers that shape America's shipping destiny have been singularly agreed upon one thing. In newspaper interviews they will unstintedly praise the motorship, but when it comes to doing anything to help America get a motorship fleet they are not interested. Shipping Boards come and Shipping Boards go while Lord Pirrie proceeds to transform England's mercantile fleet from steam to motor. We are losing valuable time. One William Penn will no more save the American overseas fleet than one swallow will indicate the coming of summer.

### Operating Economy

However, this article was not written to "boost" the motorship, but to point out the practical importance of the ton-mile cost. On the Great Lakes they have gotten the coal consumption down to one-third of an ounce of coal per ton-mile of paying cargo carried. How close, O Ship-operator on the Atlantic or Pacific, can you come to that figure? Right here I would like to suggest that what is known as the "Admiralty coefficient" is a very practical index of the kind of a sea-wagon one is trying to make money with.

$$\frac{V^3 \times D^{2/3}}{\text{I. H. P.}}$$

where D is the displacement in tons, V is the velocity in knots per hour and I. H. P. the indicated horsepower of the engines. $D^{2/3}$ is proportional to the skin surface of the hull in contact with the water, and at the speeds which are common to cargo ships the skin frictional resistance of the ship amounts to at least 75 per cent of the entire resistance of pushing the ship through the water.

At these same low speeds the power required for propulsion is proportional to $V^3$. Applying this formula to some of the Great Lakes ships, we get results as high as 342. Let's see just what that means. Assuming the speed to be the same and close to ten knots per hour, the formula shows that a very large weight of ship and cargo is forced through the water at this speed by a comparatively small expenditure of power. There are many cargo boats on the Atlantic whose Admiralty coefficient works out at ten knots to about 260, and not many are over 300.

### Advantage in Size

It is quite true, as was pointed out by Mr. James McKechnie in 1901, that the large ship has a decided economic advantage over the small one. Mr. McKechnie gave the particulars of cargo ships on the North Atlantic running from 8640 tons displacement of 5000 deadweight capacity to 26,150 tons displacement and 16,000 deadweight capacity. The first had an Admiralty coefficient of 266 at 13 knots, and the latter an Admiralty coefficient of 316 at the same speed. The first required the burning of 1.28 ounces of coal to transport a ton a mile, while the larger ship required but 7/10 of an ounce to do the same job.

It is to the credit of the Great Lakes designers that they have been able to move a ton of freight a mile as the result of burning less than half the coal in a steamer carrying not quite 10,000 tons of cargo. It wasn't the engine, for that was a standard three-cylinder triple-expansion engine supplied with steam at 177 pounds pressure by two Scotch boilers, and the fuel consumption was 1.49 per horsepower hour. One of the most important factors in water transportation is the first cost of the ship. No kind of juggling with figures can alter the fact that a ship must earn at

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# A REVIEW OF OBJECTIONS TO THE HAGUE RULES

**Following the publication of articles reciting the case for and against The Hague Rules, the division of commercial laws, bureau of foreign and domestic commerce, has published in Commerce Reports a review of objections to the rules. "It is not the wish of the division of commercial laws to be drawn into a controversy," says Commerce Reports, "but in a matter of such great importance no sound judgment can be reached without due consideration of all sides of the topic. Numerous references are made to the clauses in The Hague Rules, 1921, and attention of the readers is called to Miscellaneous Law Bulletin, published in mimeographed form by the division of commercial laws as CL-C4, and to an elaborate memorandum prepared by the Institute of American Meat Packers, Chicago, in which the various clauses are set forth with parallel comments pro and con. The article following has been submitted by a well-known legal authority, and the personal pronoun has been retained in editing."**

THE present position of The Hague Rules, 1921, is a striking illustration of the difficulty of carrying through any important reform. The attitude of the shipowners, who have most to lose by the adoption of the rules, is apparently one of half-hearted acquiescence; but the cargo interests, who have everything to gain and practically nothing to lose by the adoption of the rules, have, in some cases, actually opposed them bitterly. This opposition appears to be due in large part to a mistaken belief that the rules were framed and promulgated by the shipowners and that they will, in some as yet undisclosed way, still further restrict the liabilities of ocean carriers. One of the grounds on which the rules are most frequently objected to is that cargo interests were not represented when they were adopted. As a matter of fact, this statement is without foundation; and even if it were true, it obviously is not a sound objection to the rules if they are otherwise acceptable to cargo interests.

In May last a proposed uniform international bill of lading was drafted by a committee named by the United States Chamber of Commerce for submission at the meeting of the International Chamber of Commerce to be held in London on the 27th of the following month. After this bill of lading had been drafted, meetings were held at the office of Mr. Charles S. Haight, a member of the committee, at which various trade bodies were represented and at which the form was discussed in detail. I attended these meetings, represnting the American Institute of Marine Underwriters, and a number of individual underwriters attended and took part in the discussion as advocates of cargo interests. Those of us who represented cargo interests made a number of objections to the draft. Our principal objections were as follows:

(1) That the bill of lading contained a provision exempting the carrier from liability for losses by theft and pilferage, which we thought was improper. Although this exemption would be invalid in all cases where the negligence of the carrier contributed to the loss, the express exception in the bill of lading had the legal effect of casting on the consignee the burden of proof of negligence; and we felt that the burden of proof on this point should be left on the carrier, who had the custody of the goods, and was therefore in the best position to explain their loss.

(2) We also objected to the draft on the ground that, in its then form, it apparently left the carrier free to insert in the bill of lading an arbitrary valuation of $100 per package, or even less, and we pointed out that such clauses constituted one of the principal grievances of cargo interests. We argued that there could be no hope of compromise unless this abuse was corrected.

(3) We also insisted that no support could be expected from cargo interests for any bill of lading which did not eliminate the existing practice of requiring consignees to file claims for loss or damage, in writing, before removal of the goods or within some very brief period after discharge, under penalty of forfeiting any claim they might otherwise have. The original draft of the bill of lading left this matter quite indefinite.

### Obstacles to Collection of Claims

I think it is the belief of practically all persons who have had any considerable experience in the handling of suits against ocean carriers that the greatest obstacle to the collection of meritorious claims are clauses placing an arbitrary value on the goods and clauses requiring claims to be filed within unreasonably short periods of time. In subsequent drafts of the proposed bill of lading our suggestions were given consideration, although not to an extent which we considered satisfactory. Thereafter the matter of a uniform bill of lading was taken up by the International Chamber of Commerce in London and by the International Law Association at The Hague. The final result is The Hague Rules, 1921.

It is unfortunate that American interests were not more fully represented both at the London and The Hague conferences; but it seems manifestly unfair to object to the rules on this ground, as American interests were perfectly free to be representd and merely failed to avail themselves of the privilege. If the rules are bad, they should, of course, be rejected; but I submit that we should not criticise them or look upon them with suspicion merely because American interests chose not to be represented while they were being formulated. Moreover, although it may be that American interests as such did not have sufficient representation, the interests of shippers and bankers as a class were very fully and ably represented, and the rules themselves show the clearest evidence of the very powerful influence wielded by these interests.

### Rules and Present Law Contrasted

I will now point out the particulars in which the rules are an improvement over the present law from the standpoint of cargo interests.

I.

The rules provide for a valuation of £100 per package. Paragraph 4 of Article IV does not contain any provision for prorating in cases of partial loss. Accordingly, the carrier will be liable for the actual loss up to £100, or, say, $400, in all cases. At the present time most bills of lading contain a valuation of $100 per package, or even less. I have seen some foreign bills of lading which contain valuations as low as 10 francs per package. Furthermore, most bills of lading contain a prorating clause under which the consignee can only recover such proportion of the agreed valuation as the goods lost bear to the actual value of the package. For example, if a package is actually worth $2000 and one-quarter of the contents is stolen, the consignee, who has an actual loss of $500, can only recover, under the ordinary bill of lading with the $100 valuation clause, the sum of $25. Under The Hague Rules he would recover up £100, or, say, $400, at the present rate of exchange. In other words, the consignee would recover sixteen times as much under The Hague Rules as under the form of bill of lading now in common use.

While theoretically it may be desirable to make the carrier an insurer for the full value of the goods, I think anyone who makes a careful study of the subject will recognize that full liability is inseparable from some schedule of graduated freight rates based on the value of the goods shipped. As soon as this feature is introduced it becomes necessary for the shipper to declare the value of his goods, which brings us back very much to where we are today, i. e., the carrier will be liable for the value actually declared by the shipper. Having this aspect of the matter in mind, I have felt that the most desirable arrangement from the standpoint of the shippers is to continue the present system of fixing an arbitrary valuation for which the carrier accepts liability at his minimum freight rate, but make the amount of such valuation uniform and substantially larger than the figures commonly found in the bills of lading in use at the present time.

The figure which I have personally advocated is $1000, but I feel that The Hague Rules represent a fair compromise, particularly in view of the omission of any prorating clause. A carrier who knows that he is responsible for all losses up to £100 per package will find it to his interest to use every possible precaution for the protection of the goods in his custody, and this, after all, is the object to be sought from a broad economic standpoint. The shippers can readily obtain insurance at reasonable rates as long as the carrier takes proper care of the goods; and the way to make the carrier exercise the highest degree of care is to impose upon him a substantial share of the loss. If shippers force him to assume the entire loss, the result may be, as indicated above, to defeat the very end they have in view.

II.

As the law now stands in this country, a carrier can require written notice of claim to be filed before the removal of the goods or within a few days after the vessel finishes discharging, and failure to comply with this provision affords a complete bar to any claim. Ocean bills of lading almost invariably contain provisions to this effect. Under The Hague Rules failure to file claim is only prima facie evidence of delivery in good condition; and this, as a practical matter, does not materially increase the burden which must rest on the consignee in any event, i. e., the burden of proving that the goods were damaged when delivered by the carrier.

Furthermore, bills of lading in common use usually provide that suit must be brought within a few months, whereas The Hague Rules allow one year within which to bring suit. As compared with the law and practice now existing, The Hague Rules represent an extremely important concession to cargo interests.

While it may be suggested that still greater relief could be obtained by legislation, I think this is highly improbable. After all, there is a certain equity in the carriers' contention that they are entitled to reasonably prompt notice of claim, and I scarcely think Congress will pass an act permitting consignees to sleep on their rights indefinitely and then come in with their claims after the damaged goods have been disposed of and the best evidence as to the damage is no longer available. Personally, I think the provisions of The Hague Rules are as favorable to cargo interests as any rule which Congress can be expected to enact.

III.

Another very important and striking feature of The Hague Rules is that they eliminate all of the objectionable exceptions and exemptions commonly found in bills of lading. As indicated above, such exceptions are invalid in cases where the loss is due to the carrier's negligence; but the fact that damage falls within one of the exceptions has the effect of casting on the consignee the burden of proving that it was due to negligence. This burden is usually difficult and frequently impossible to sustain, because of the fact that the evidence is ordinarily within the control of the carrier. Under The Hague Rules, subdivisions (c) to (p), inclusive, of Article IV, subdivision 2, all relate to matters which, by their very nature, cannot be chargeable to the negligence of the carrier. Subdivision (q) obviously cannot come into effect until the carrier has proved his freedom from negligence, and hence this subdivision is unobjectionable.

### Subdivisions (a) and (b)

This only leaves for consideration subdivisions (a) and (b). Subdivision (b), relating to fire, has precisely the same legal effect, in my opinion, as the Act of 1851, which relieves the carrier from liability for damage by fire unless caused by the carrier's "design or neglect."

Under The Hague Rules, as under the statute of 1851, I understand that the carrier is not liable for damage resulting from fire, even though the fire results from the negligence of his servants; but he is liable for damage if the fire results from his own negligence. Obviously, a fire resulting from the carrier's own negligence would involve some violation of subdivisions 1 and/or 2 of Article III. and the carrier would be liable for this violation, notwithstanding the exemption granted by Article IV.

With respect to subdivision (a), it will be observed, in the first place, that this provision is substantially identical with the language of the Harter Act. In my opinion, the slight differences in language do not in any way change the legal effect of this provision. The only substantial question raised by this provision is whether the exemption now afforded to shipowners under the third section of the Harter Act should be abolished. The bill introduced by Senator McKellar in April of this year and referred to the Senate Committee on Interstate Commerce would abolish this exemption, excepting in coastwise trade. To do this, however, would be to take away from American shipowners a protection which they have enjoyed for nearly thirty years and which has never been the subject of any serious criticism. Moreover, if this protection is abolished, the law of this country would be fundamentally at variance with that of all other maritime nations. Since the Harter Act was passed similar acts have been passed in Canada, Australia and New Zealand, and similar legislation is now under consideration in the United Kingdom and Ireland. . . .

In this connection I call attention to the fact that the McKellar bill affords no relief to shippers in respect of clauses requiring claims to be filed or suits brought within unreasonably short periods of time. The McKellar bill also leaves the question of burden of proof untouched. Both of these matters are fully and, I think, fairly dealt with in The Hague Rules.

The foregoing completes my discussion of the benefits which The Hague Rules confer on cargo interests.

### Interpretation of Article V.

I shall not discuss in detail the objections which have been raised by various opponents of the rules, but will say in general that I find nothing in the rules to which any substantial objection can be taken by cargo interests, with the possible exception of Article V. This article is, on its face, susceptible of the interpretation that the carrier is at liberty to make a special contract with any shipper, upon such terms as may be mutually satisfactory, so long as no bill of lading is issued and the receipt actually issued is stamped "non-negotiatble." While I think it is highly improbable that this method of doing business would ever be adopted to an extent sufficient to be a matter of any real concern, I agree that the language should be modified to carry out the real intent of the draftsmen of the rules. This intent, as explained to me by gentlemen who took part in framing the rules, was to take care of cases where shipments were made under exceptional circumstances which made it impossible to comply with the ordinary rules. Such cases arise from time to time in connection with damaged cargo, salvage operations, etc. Giving the rule its literal interpretation, it would be contrary to the Harter Act and therefore void as to shipments entering or leaving this country. Giving the rule the only effect for which it was intended, I am not at all sure that it is in conflict with the Harter Act. Be that as it may, I am sure that any amendments of the Harter Act which may be proposed in this connection can be limited to the exceptional class of cases which the International Law Association is said to have had in mind in drafting this rule. Accordingly, I do not consider that Article V need give cargo interests any concern, although I quite agree that they should be represented in connection with any amendment of the Harter Act designed to legalize this rule.

### Correction of Article IV

I have called attention on several occasions, where the rules were under discussion, to an obvious error in subdivision (q) (Article IV, section 2). The word "or" in the second place where it appears in this subdivision should read "and". I anticipate no difficulty in having this error corrected.

Sections 3 and 4 of Article III are perhaps inconsistent to some extent with section 20 of the Federal Bills of Lading Act. These sections, however, do not affect the substantive rights of the parties, but, in effect, merely regulate the burden of proof, i. e., the evidential effect to be given to certain admissions in the bills of lading. The provisions of The Hague Rules in this respect do not seem to me unfair, and even if they be regarded as objectionable from the standpoint of cargo interests, I do not think the objection is serious.

My conclusion is, therefore, that the rules contain every evidence of their having been formulated in the utmost good faith and with a fair regard to the rights of all parties interested. I think they concede to cargo interests more than 75 per cent of all that those interests can fairly ask; and I believe the rules will prove a more satisfactory basis for future business relations with ocean carriers than any legislation which can reasonably be anticipated.

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## GOVERNMENT AID—GOOD BUSINESS

(Continued from page 293)

diture of from thirty-five to fifty millions per annum as a straight-out subsidy to overcome the disparities of operating costs, this immense fleet of merchant ships can be operated profitably under private ownership, and at a conservative estimate can be sold for considerably more than its present depressed market value. The interest alone on the increased valuation of our merchant fleet would go far towards paying the cost of the financial aid furnished by the government in the form of the proposed subsidy.

For the subject under consideration, the subsidy determined for a period of at least ten years, combined with the sale of our government-owned merchant ships which will surely follow, is a good business proposition for the country at large. I know of none better.

Gentlemen, the good common sense of the American people can, in my opinion, be relied upon to take the only step now necessary to give us our proper standing on the ocean and I look forward with no apprehension as to the final results of the President's recommendations to our national legislature. We must approach this matter with broad vision and not be disturbed by the petty technicalities which will be advanced by the well-meaning but poorly-informed opponents of this and similar proposals heretofore advanced in the interests of our nation as a whole.

The United States has now taken the lead among the nations of the world, a fact not to be forgotten in a discussion of this most important subject, and let us above all things keep in mind that other supreme fact which history has disclosed, no nation has ever attained and maintained for a reasonable time a world pre-eminence without ample power on the seas both in war and merchant craft.

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## THE MARK TO SHOOT AT

(Continued from page 294)

least 15 per cent on her first cost every year if proper provision is to be made for "insurance, depreciation and interest on investment"; that means 1¼ per cent a month. Mr. Harriman's $800 per month excess crew wages for an 8000-tonner is ten cents a month per deadweight ton, which is interest at 15 per cent per annum on $8; that is to say, the ship operator who has to pay $800 more a month for his crew than his competitor may still be able to meet his competition if his ship has cost $8 less per deadweight ton. First cost is a very serious item in operating cost.

# WORLD'S LARGEST TWIN-SCREW LINER

THE Homeric, the world's largest twin screw steamship and the latest addition to the Southampton-Cherbourg-New York service of the White Star Line, sailed from New York on her maiden voyage on March 1. This vessel, formerly the Columbus, was built by F. Schichau of Danzig for the Nord Deutscher Lloyd and launched on December 17, 1913. Owing to the war, the vessel was not completed and at the close of hostilities was turned over to the reparations committee and sold by them to the White Star Line.

She has an extreme length of 774 feet 3 inches, a molded breadth of 83 feet, a molded depth to main deck of 53 feet 9 inches, a gross tonnage of 34,000, and is powered with triple expansion 4-cylinder, twin engines designed to develop an indicated horsepower of 30,000 and to drive the ship at 20 knots sea speed.

As originally designed she would have carried 536 first, 444 second, 678 third, and 110 fourth class passengers in addition to her crew. This arrangement was modified by the White Star naval architects so that now she carries 529 first class passengers, 487 second, 1750 third, and has a capacity in her hold for about 10,000 tons of freight and express.

### Decorative Features

Her decorations were designed by P. L. Troost of Munich, a past master in the art of decorating marine interiors. All of the first class public rooms are situated on the boat deck, with the exception of the dining saloon, which is on the main deck. These first class public rooms are especially noticeable for the size of the windows and of the light wells and for the great height of the ceilings. Some of these rooms are considerably larger than the equivalent rooms on liners of much larger tonnage, and the fact that they are arranged en suite on one deck adds to this effect of colossal size.

In this connection we would invite our readers' attention to the illustration on this page showing the lounge. This room is 94 feet in length, 47 in width, with a flat ceiling 20 feet high, out of which springs a great central dome of amber glass. The colonnade of fluted Doric pillars on either side of this room with tall windows between the pillars is a very unusual decorative feature and gives to this room rather the characteristics of some great reception hall ashore.

Above—Artist's drawing of Homeric.

Below—Interior, showing the fireplace in the smoking room.

There are about 40 very handsome suite rooms with private baths, sitting and dressing rooms, and all of the first class cabins have hot and cold running water, are heated by both steam and electricity, and in the majority of cases are arranged with individual beds for either one or two occupants.

The arrangement of the public rooms gives a drawing room under the navigating bridge with large plate glass observation windows; running thence aft comes a reading room, writing room, the lounge, a music room, the smoking room; and aft of that a plate glass enclosed sun veranda, the whole occupying a length of 340 feet. While each room has its own individuality in decoration and lighting features, all the rooms are blended into a harmonious whole.

### Machinery

The propelling machinery of the Homeric, designed and installed by her builders, consists of two sets of triple expansion, 4-cylinder engines, the cylinder sizes being 50.4 inches for the high pressure, 86.6 inches for the intermediate pressure, and 96.5 inches for both of the low pressure cylinders, with 70-inch stroke. The boilers are 12 in number, coal-fired, fitted with superheaters and with Howden forced draft. The working pressure is 210 pounds.

### Structural Features

The double bottom extended for the full length of the ship has an average depth of about 4 feet and beneath the engine rooms 6½ feet. The keel is watertight for practically the entire length of the hull, and the double bottoms are divided up by 15 watertight bulkheads. All the latest requirements for safety of life at sea are followed. In the compartments of the double bottom the tanks provide storage for 2300 tons of water ballast, 2200 tons of drinking water, and 400 tons of feed water.

### Special Features

Electric elevators are provided, two in the first class main companionway and one in the second class, each with a capacity for 8 passengers. There is also a special luggage elevator. For intercommunication a complete telephone system has been installed, much like the private exchange systems as used in American hotels. Each of the larger staterooms has a telephone instrument within convenient reach of the bed and an operator is always on duty at the central station. One delightful feature provided in great profusion on this vessel is the open fireplaces in the public rooms. The ventilating system has been worked out so that warmed or cooled air can be delivered at will through the ducts to the various compartments.

The Homeric, in addition to being the world's largest twin-screw liner, is probably also the world's largest coal-burning vessel and has the world's largest reciprocating engine afloat. She will consume probably about 3500 tons of coal on each trip. With the Homeric, the Majestic and the Olympic on the New York-Cherbourg-Southampton service, the White Star Line is able to offer unsurpassed de luxe cabin accommodations to its patrons and at the same time is able to divert more of its fine intermediate liners into the special excursion routes, which are becoming increasingly popular among American and British tourists. In this connection we are glad to announce that a recent dispatch from President Franklin of the International Mercantile Marine Company states: "Delighted with Majestic. Ship most satisfactory and far exceeds expectations. Speed trials very satisfactory and am satisfied she will comfortably exceed 25 knots at sea in favorable weather, but of course will not run at top speed for earlier voyages."

Colonnade in lounge of the Homeric

The Majestic is in charge of Commodore Sir Bertram Hayes and the staff and crew who will bring her across the Atlantic in May on her first voyage. She will sail from Southampton May 10 for New York, calling at Cherbourg.

# MUST KNOW FIRST AID

UNDER a recent ruling of the board of supervising inspectors, Steamboat-Inspection Service, approved by the secretary of commerce, original licenses to masters, mates, pilots and engineers will not be granted until they have been examined in first-aid by the Public Health Service.

In co-operation with the Public Health Service and under the direction of Rev. A. R. Mansfield, superintendent of the Seamen's Church Institute of New York, Robert W. Hart, past assistant surgeon, has issued the "Manual on Ship Sanitation and First-Aid for Merchant Seamen." By order of H. S. Cummings, surgeon general of the Public Health Service, "for the present at least this book will be used for instruction and the examination will be based upon its contents."

The object of the manual is to furnish officers and men of the merchant marine with a small, comprehensive textbook on sanitation and hygiene, containing an outline of the common medical and surgical conditions that obtain on shipboard, together with the directions for the treatment of disease and also for the proper care of injuries. During the last several years it has become increasingly evident that something more than ordinary directions for first-aid is necessary on board ship, particularly where long voyages render professional medical aid impossible. The manual, therefore, will not only meet the need of a textbook, but, in the hands of both officers and men of the merchant marine, it will prove a source of information not only in case of emergency, but also in the event of the development of diseases. The manual is divided into the following parts:

1. General sanitation and hygiene.
2. Anatomy and physiology.
3. Sick bay and medicine chest.
4. Medical first-aid.
5. Surgical first-aid.

The manual contains a large number of illustrations, diagrams and photographs; is simply written and augmented by an appendix containing various regulations, laws and forms which concern the physical welfare of seamen.

# AN UNUSUAL TEST FOR A FLOATING DOCK

IN the vicissitudes of service floating docks are subjected to more or less hard usage. The way a floating dock stands up under such service depends on the design of the dock and the workmanship put into it. As an illustration of a trying condition, the following account of a fire which occurred in December, 1920, at the plant of Jahncke Dry Dock Company, New Orleans, presents rather unusual features.

This fire occurred December 16, 1920, starting in some oil pools on the wharf structure. The fire spread rapidly and soon one wing wall of the Crandall type floating dock was on fire. To quote from a letter to the Crandall Engineering Company from Mr. Ernest Lee Jancke, "There was on this dock an 8000-ton oil tanker. This tanker at the time of the fire had over 100 plates out of the bottom and three-fifths of the entire length was supported, not on keel blocks, but held in perfect alignment by heavy wooden 12 by 12 shores. The fire, as you know, completely destroyed all pump and electrical connections.

"The fire-fighting tugs, in pumping water to extinguish the flames, gradually filled up the pontoons to such an extent that there was nearly five inches of water on the deck of the dock on the inshore side at the time the flames were finally extinguished. You can appreciate the position of this dock when I tell you that there had been so much water pumped into the pontoons and the dock had listed to such an extent that a number of the main supporting shores on the outboard side of the vessel had fallen down. This, together with the fact that there was barely an inch and a half of freeboard between the burned section of the inboard wing and the water level in the river, made the proposition a rather difficult one to handle.

"Well, you know we saved the dock and the ship in the dock; and the men were working again the next day, riveting plates on the bottom of the tanker.

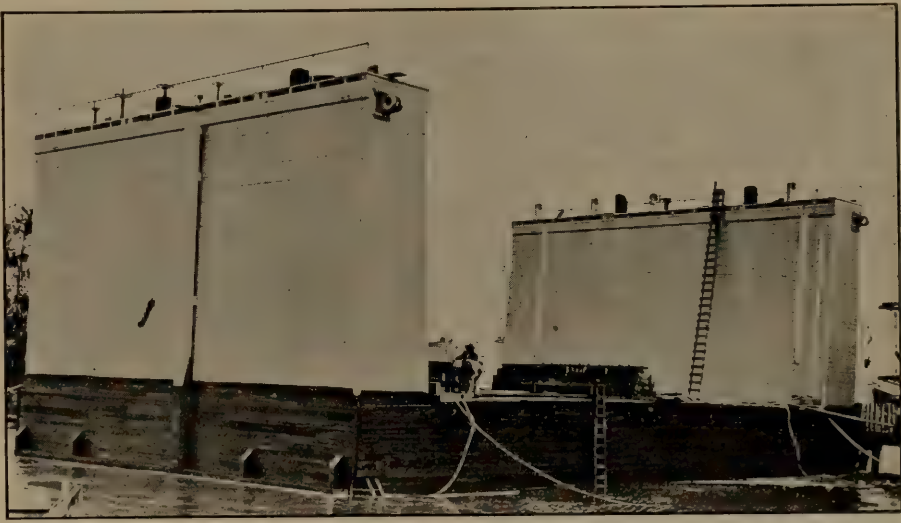
"We kept the dock floating a number of weeks by a steam pump boat. We completed the bottom job on the ship, replaced all of the wooden truss timbers inside of the inshore wing, rebuilt the wing itself, and undocked the vessel without any damage whatever, the ship having been kept in perfect alignment during all of this work.

"Please understand that the work under the conditions above outlined was carried out simultaneously, that is, the dock had to be kept afloat, the ship had to be kept in alignment, the trusses had to be taken out one by one and replaced, the wing had to be rebuilt, and this work was done without interfering with the repair work on the vessel.

"I have gone into detail regarding this matter because it left on my mind such a vivid impression as to the stability of the dock itself under most trying circumstances and at a time when one would expect, at any moment, that the entire dock, ship and all, would turn turtle.

"The dock, as you know, has been completely repaired and is today in splendid condition, working most satisfactorily." This was indeed an extreme test and gave unusual proof of the strength and stability of the dock.

This floating dock is of the self-docking, longitudinally-trussed type developed by the designers. It is made up in six sections of timber construction. In each wing wall of each section there is incorporated the panel of a Warren truss, the panels terminating in steel connection castings. The sections are connected by steel pins joining the corresponding lugs of the steel castings. When the sections are so connected the trusses act as a backbone to the dock and make it a rigid unit. It was the action of these trusses which held the dock together during the fire and prevented a most serious accident. During docking operation these trusses act to equalize any differences in buoyancy due to uneven pumping. This insures the ship against distortion and serious damage from such cause.



Above—Pontoon for Crandall dock just after launching.
Below—Crandall floating drydock at the plant of the Jahncke Drydock Company, New Orleans.

The transverse or sustaining trusses are of a statically determinate type, enabling the stresses in the various members to be accurately calculated and the sizes of members and joints determined in accordance with sound engineering practice. The result is maximum strength and minimum cost.

To eliminate the loss of lifting power which results from using rock ballast, this dock is designed for sinking with water ballast. This is accomplished without the use of separate tanks and pumps. It results in having 100 per cent of the lifting capacity of the dock available for lifting ships instead of from 20 to 25 per cent being wasted in uselessly lifting permanent ballast.

The general dimensions of the dock are:

| | Feet |
|---|---|
| Length over keel blocks | 440 |
| Width overall | 100 |
| Width clear | 80 |
| Draft over keel blocks | 22 |

The pumping machinery consists of twenty-four 10-inch centrifugal pumps located at the bottom of the pontoons, each directly connected to an electric motor. The control of the motors is centralized so that after the ship is grounded and blocked one operator controls the operation under the supervision of the dockmaster.

One of eight 125 H. P. Westinghouse motors operating the dock pumps
(Westinghouse photos)

The bilge blocks are of the patent releasing type, enabling the block to be readily released and replaced under the heaviest load. The blocks are moved along the slides by means of endless chains operated by hand winches on the wing walls. They eliminate much lost time and labor.

The Crandall Engineering Company, drydock engineers, Boston, are the designers of the dock. It was built at Beaumont, Texas, by the Beaumont Shipbuilding & Drydock Company. After purchase by the Jahncke Company in 1920, the sections were towed to New Orleans. Twelve hours after arrival the sections were joined together and a ship was drydocked. It has been in constant use since that time, giving most satisfactory service.

# SEXTANT BATTERY LAMP

THE following is a description by Captain A. J. Hosken of the British steamer Monteagle, of a simple but ingenious lighting device which he developed for use in stellar navigation:

"I have fitted my sextant with a very simple device for the purpose of reading it at night time.

"It consists of a small dry battery, a push button, and a small electric light.

"I have used this little reading light for several months, and find it works well, being a great improvement over other methods of reading off at night, as it is quicker, more convenient, and without the objection of having the eyes dazzled by a bright light; just the thing required for simultaneous stellar observations.

"I found the best plan is to observe with the right eye and read off with the left eye, as in that way the right eye has no chance of being dazzled.

"The dry battery I have in use is an ordinary small pocket flash lamp about 3 inches long and 1¾ inches wide. The top which held the lamp was removed, and in its place a piece of vulcanite was fitted with two terminals which make contact with the contacts on the dry battery inside this cover. Vulcanite and terminals can be removed so that a new battery may be put in place.

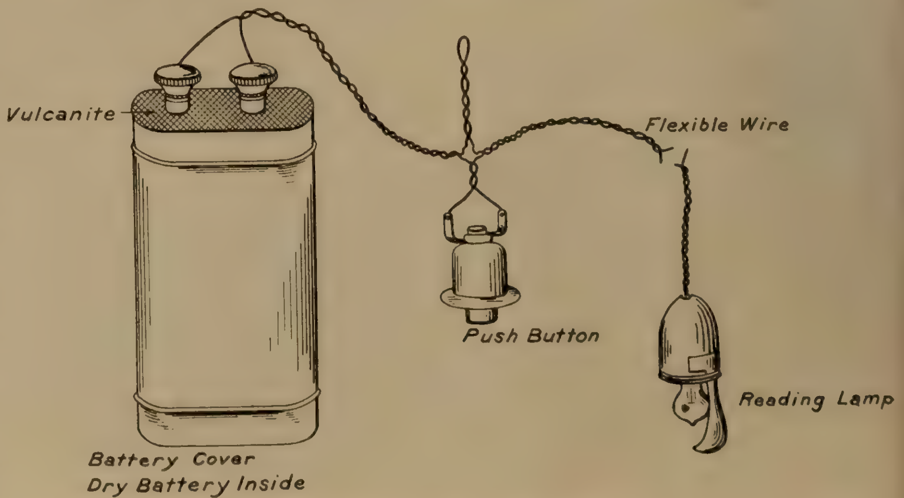
"The battery cover with battery inside has been fastened underneath the body of the sextant. This battery cover, push button and reading lamp are shown in the accompanying sketch.

"The push button is connected with the terminals on the battery with fine, flexible, insulated wire, also connected to the reading lamp. The push button is fastened on the outside frame of the sextant, between the index glass and the horizon glass, in such a way that it hangs down a couple of inches. When the sextant is held in the right hand the push button may be held between the first and second fingers of the right hand with the thumb ready for pressing the button. This sounds as if it might be awkward, but in actual practice it is quite easy and comfortable.

"The electric lamp is fitted with a shade and is attached to the sextant by slipping it under an elastic band on the swing arm of the index reader.

"The whole arrangement can be obtained for about a dollar, and is quite easy to fit up. The dry batteries seem to last about two or three months.

"The first arrangement I tried of this sort I made portable. It could be attached quickly and the battery was carried in the pocket. It worked well, but I prefer it attached to the sextant, as it adds very little to the weight, is always ready for instant use, does not interfere with the stowage in case, or with taking sights in daylight."



Arrangement of sextant battery lamp

# RAISING 14,000 TONS WITH A PUSH BUTTON

## Giant New York Dock Equipped with Individual Push Button Control of Pump Motors. Dock Master's Thumb Raises the Ship.

By JAMES GOLDSBOROUGH*

ONE of the latest developments in the control of drydocks is illustrated by the 14,000-ton, four-section, floating dock recently erected in the yards of Theodore A. Crane's Sons Company, Erie Basin, Brooklyn.

All of the pumps of this dock are controlled directly by the dock master himself. He stands in a little house, directly facing the dock, where he has a clear view of all proceedings. Within this house is a waterproof cabinet, which contains eight sets of push buttons, each set consisting of two buttons marked "start" and "stop", respectively. The sets are numbered from one to eight, and each controls one of the eight pump motors in the dock.

To start any or all of the motors, the dockmaster presses the proper "start" buttons; to stop them, he presses the "stop" buttons. Thus the control of the delicate operation of pumping out a dock is literally at his finger tips, and his days of bawling out orders, with the consequent loss of time and possibility of being misunderstood, are at an end.

This is one of the first instances of automatic electrical control of a drydock, although this system has been successfully used in other industries, notably in steel mills, for many years.

The controller itself is located in the yard's substation. It consists of a large panel board carrying eight groups of magnetic contactors, eight ammeters, and eight sets of push-buttons, which are duplicates of those in the dock control house. The actual motor connections are made by the contactors (and not by the push buttons), and these are so designed that they close in the proper order and at a rate that will start the motors in the least possible time consistent with safety.

Above—Dock master's station on the pier at the head of the 14,000-ton dock at Theodore A. Crane's Sons Company, Erie Basin, Brooklyn.

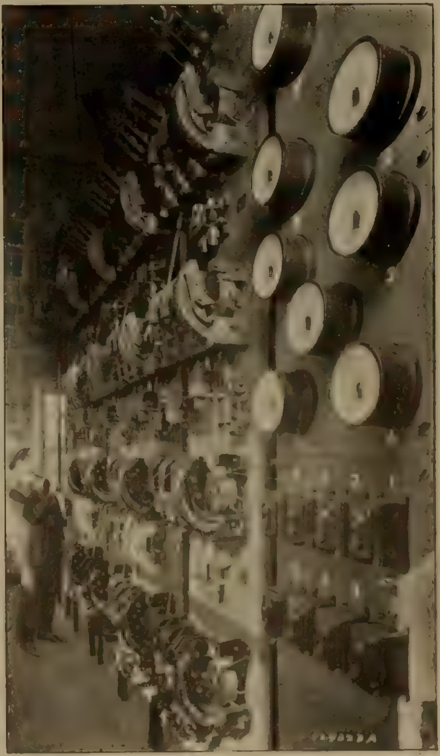
Note the eight push button switches controlling motors on the drydock.

Below at left is shown the dock with a small ship up.

At right—View in the power station showing panelboard with eight groups of magnetic contactors. Ammeters on motor circuits and auxiliary push button control in case dock master's station is out of commission.

The motors operate on three-phase, 25-cycle, 440-volt current, but are started by being connected with a 220-volt circuit. When the dock-master presses the "start" button of No. 1 motor, for example, the contactors are energized and those that connect it to the 220-volt circuit close first. This application of low-voltage current starts the motor easily and brings it gradually up to speed. When the proper speed is attained, a relay mounted on the panel closes automatically, and the 440-volt contactors then close, connecting the motor directly to the running circuit. When the "stop" button is pushed, all contactors open and disconnect the motor.

The ammeters mounted on the control panel give the electrician in charge of the substation complete information as to the performance



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* Westinghouse Electric & Manufacturing Company.

of the motors. By glancing at these instruments, he is able to determine whether or not each motor in operation is taking its full share of the load. Any irregulatrities indicated are immediately investigated, and thus troubles can often be remedied before they actually develop.

The duplicate set of push buttons in the substation provides control of the motors in case of trouble at the dock house, and also permits the electrician to act in case of an emergency.

The motors are of the vertical squirrel-cage type and are rated at 125 horsepower, 290 R. P. M. They are provided with ball thrust bearings and their coils are impregnated to render them weatherproof. They are mounted in little houses on the wings of the dock, and each is directly connected to an Alberger centrifugal pump.

Current for this installation is received from the Brooklyn Edison Company at 6600 volts and is stepped down to 440/220 volts by three oil-insulated self-cooled transformers.

The dock itself cost over $1,000,000 and all of the wooden construction was handled by the yard. The marine construction engineer in charge was Henry J. Gielow. All of the electrical equipment was supplied by the Westinghouse Electric & Manufacturing Company.

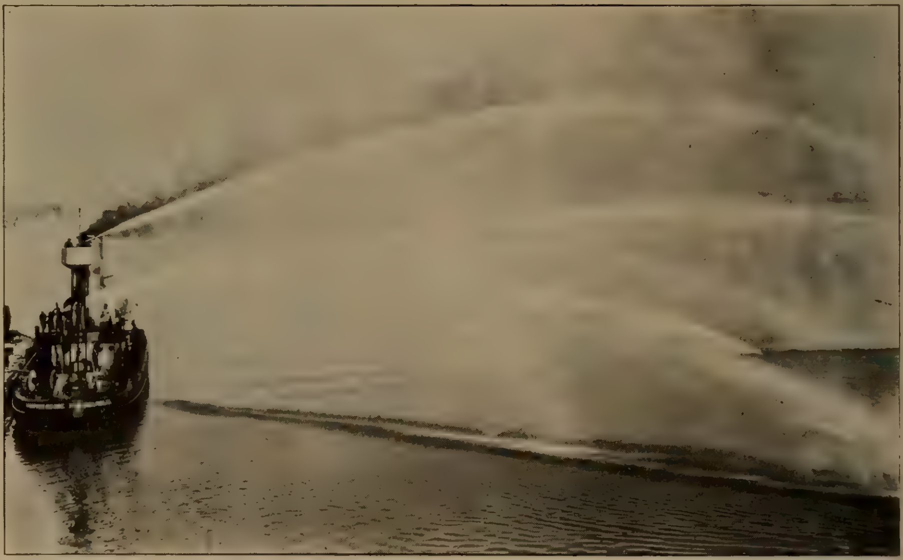
# A NOTABLE FIREBOAT TEST

THE Merchant Shipbuilding Corporation, Chester, Pennsylvania, recently completed the fireboat J. Hampton Moore for the city of Philadelphia. This boat, named after himself, was accepted by Mayor Moore of Philadelphia on February 8 after exhaustive official tests on which she demonstrated her ability more than to meet the specification requirements.

The river trial of this boat, as to her maneuvering and speed ability, was very successful. No speed had been guaranteed but the boat made with great ease fourteen miles an hour during a four-hour trial.

The trial of pumps was a more difficult matter, as the volume of water to be thrown from the nozzles and the pressure to be maintained were very great for a boat of the size of the J. Hampton Moore and of her limited boiler capacity. The requirements called for the delivery of 10,000 gallons a minute against a pressure of 200 pounds. The permissible boiler size, limited by the size of the boat, necessitated a very heavy steam evaporation in order to meet the pump requirements. This steam evaporation would have to be approximately 8 pounds a square foot of heating surface, which called for a fuel oil capacity of approximately 425 pounds a burner.

The limitations of forced draft equipment made necessary in order to reach these figures very careful, painstaking design and construction throughout, with the result that on the official test the four pumps delivered at the nozzles over 10,000 gallons of water a minute at 203 pounds pressure; and this performance was kept up over a considerable period of time, so that the fire chief and the engineering force of the city of Philadelphia were perfectly satisfied and gladly accepted the equipment. Put in another way, the performance of the J. Hampton Moore means that she must in action throw 30 tons of water a minute to a height of 100 feet, and that this water must carry more than 300 feet from the nozzle.



Above.—Pump test on the J. Hampton Moore showing four nozzles under full pressure of 203 pounds a square inch.

Below.—Broadside view of J. Hampton Moore on her trials.

—Photographs by J. E. Green

# FIRST AMERICAN ORE AND OIL VESSEL

## Bethlehem Shipbuilding Corporation Delivers Steamship Bethore 20,500-Ton Combination Carrier to the Ore Steamship Corporation for Operation Under American Register

THE steamship Bethore delivered to the Ore Steamship Corporation on February 11, 1922, at the Sparrows Point, Maryland, plant of the Bethlehem Shipbuilding Corporation, Ltd., is the second of the large combination ore and oil vessels to be completed at that plant. The first was the G. Harrison Smith, delivered to the International Petroleum Company September 12, 1921.

The commissioning of these steamers inaugurates the entry into service of a new type of vessel that has been developed to meet an economic demand in the construction of oil carriers. The Bethore is arranged with separate cargo spaces so designed and located that either a full load of oil or a full load of ore can be carried, or general cargo equal to approximately from one-half to one-third the deadweight capacity, according to density, can be carried. The utility of this type of vessel is apparent when it is recognized that it provides means for making a profitable return voyage after a cargo of oil has been delivered, thus enabling the shipowner to obtain 100 per cent service from his fleet.

The ordinary tanker, as developed to date, is especially efficient in handling and transporting oil cargoes, yet suffers from the necessity of return voyages made in ballast. This condition means an economic loss which has been accepted as a necsary part of the industry. The advent of the combination ore and oil vessel, however, changes this situation and makes possible a greater return on the investment. Shipowners and operators are thoroughly aware of the necessity for economical operation and the importance of keeping their fleet moving with cargoes the greatest possible number of days in the year, especially with present operating costs, and the potentialities inherent in this new type of vessel will be decidedly interesting. That the construction of combination vessels is not necessarily confined to oil carriers, but may be applied to other types of freighters, is evidenced by the construction of two combination coal and ore carriers now building at the Union Plant, San Francisco, of the Bethlehem Corporation.

Stern of the Bethore on the ways at Sparrows Point

**The combination ore and oil carriers were fully described as to structural details in a former issue of Pacific Marine Review. As the construction of two similar vessels for the carriage of coal and ore has recently been commenced at the Alameda works of the Union plant of the Bethlehem Shipbuilding Corporation, Ltd., the present rather full account of the machinery and trials of the Bethore should be of great interest.**

### First Under American Registry

The Bethore is the first combination ore and oil vessel under American registry and ranks as one of the largest of all freight vessels afloat. There are undeniable economies and advantages in the use of vessels of great carrying capacity when conditions in their trade routes allow their use. This is true in the case of the Bethore, where the dimensions have been limited only by the depth of water available at loading and discharging terminals.

In design the Bethore is of the patent combination ore and oil type and is similar, with some exceptions, to the Marore and Steelore now under construction at the Sparrows Point Plant and described in the April, 1921, issue of Pacific Marine Review. She was designed specially for carrying a cargo of oil from Mexico to South America, where the oil is to be discharged and a cargo of ore taken on for the United States, thus eliminating the necessity of making the return voyage under ballast as usually made by the ordinary tanker. General cargo can be carried on the trip to Mexico.

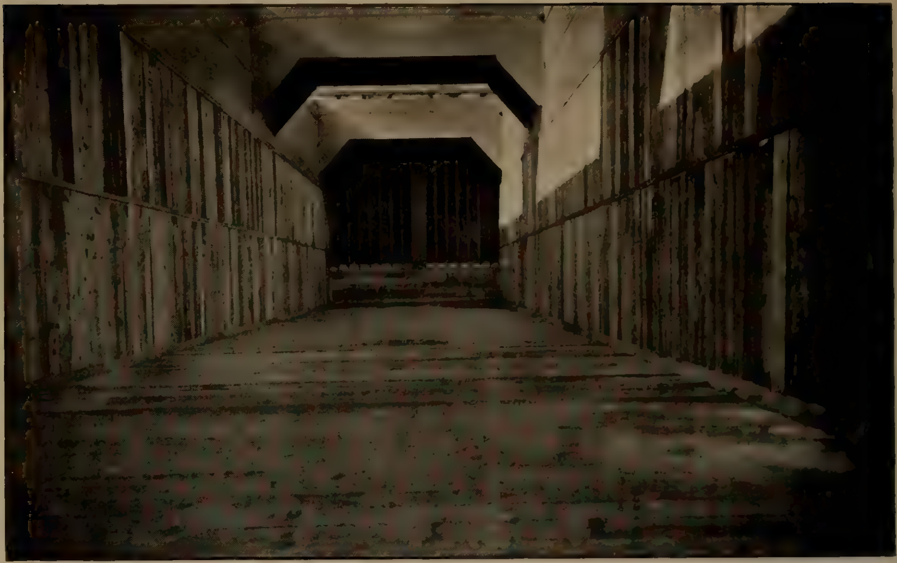
Steamship Bethore ready for her trials

The general dimensions of the Bethore are in brief as follows: length overall is 572 feet, and length between perpendiculars 550 feet; the breadth, molded, is 72 feet, with a molded depth of 44 feet; the deadweight capacity is 20,500 tons, and displacement is 29,967 tons. Loaded the draft is 32 feet 4⅛ inches, and light draft is 11 feet 3½ inches. Framing is longitudinal and the vessel is classed to the highest rating of the American Bureau of Shipping and British Corporation.

### Cargo Spaces

The principal cargo spaces in the Bethore consist of the cargo oil tanks and fuel oil tanks and the ore holds. The latter occupy a space 30 feet wide by 30 feet deep for a distance of 360 feet through the hull of the vessel, and are elevated 14 feet above the keel, which feature constitutes one of the inherent advantages of this type of ore-carrying vessel. The illustration showing the Bethore in course of construction indicates clearly the relative positions of the ore holds and the oil tanks, which are distinctive features of this type of vessel. The oil cargo space contains 741,294 cubic feet, the fuel oil space 141,160 cubic feet, and the ore cargo space of the three holds 367,120 cubic feet.

The difficulties met with in the ordinary freighter because of the low center of gravity in carrying a dense cargo, like ore, are eliminated in this design. The bottom of the ore hold being raised 14 feet above the keel and being relatively narrow (30 feet in a molded width of 72 feet) allows the center of gravity to be brought to a suitable height. Furthermore, the extreme length of the ore holds (a total of 360 feet) distributes the cargo over the greatest possible length and assures a uniform distribution of stresses throughout the frame of the vessel.


No. 2 ore hold of the Bethore with lagging in place. The dimensions of this hold are 30x30x130 feet

### Oil Tanks

The oil cargo is contained in eleven tanks on each side of the vessel. Each of these tanks extends from the ore hold to the shell of the vessel (a distance of 21 feet) and also extends beneath the ore hold to the longitudinal bulkhead running from the keel to the ore hold. Thus, with an oil cargo, the center of gravity is raised to the proper height. The wing spaces of the oil tank act as expansion trunks, and on account of their depth, afford the greatest possible flexibility for carrying liquid cargoes of varying density, allowing adjusting of trim under all conditions of load. Besides the cargo oil tanks, there are on each side of the ship one fuel oil tank aft of and one forward of the cargo oil tanks, and a fuel oil deep tank forward.

Deck view of Bethore looking aft from bridge, showing 12-inch stern discharge line for oil cargo

The forward ore cargo hold is served by two hatches 30 feet long, and one 19 feet long. The middle hold is served by three 30-foot hatches, while the after hold is served by two 30-foot and one 25-foot hatch. All hatches are 30 feet wide, the full width of the ore hold, and are of the corrugated patent Hogg-Carr type. Ten kingposts, with eighteen 36-foot Oregon pine booms of three tons capacity, are provided for the handling of ore or general cargo in case the ship engages in a trade not having terminal facilities for loading and unloading. The ten 8¼-inch by 10-inch winches which handle the tackle for raising the hatch covers are available for working the ¾-inch diameter wire rope whips on the cargo booms.

### Discharge and Loading

The loading and unloading of an oil cargo is similar to the operations of an ordinary tanker. Three oil hose cranes and filling manifolds are located on each side of the upper deck and fill through 12-inch risers to the hold. For discharging oil, 10-inch suction lines from the tanks discharge into the 14-inch fore and aft hold suction lines, one on each side of the ship. In the pump hold, below the bridge deck and between the forward and middle ore holds, two 14-inch by 20-inch by 16½-inch by 24-inch compound horizontal duplex cargo pumps discharge through the port and starboard 12-inch risers and through 12-inch discharge lines on the upper deck, boat deck, and poop deck leading over the stern. Suitable cross connections and valves are provided so that either pump can draw oil from any tank and discharge over either side or stern.

In unloading ore, two 15-ton grab bucket unloaders will unload the vessel in about forty hours. The ore holds are so proportioned in their areas that as ore is unloaded the rise of the vessel as it loses draft just equals the fall in level of the ore in ore holds, the unloading buckets thus working always at the same level.

### Machinery

The main engines in the Bethore are Bethlehem triple expansion reciprocating engines with 25-inch, 41-inch and 68-inch diameter cylinders and a 48-inch stroke. The boilers consist of three Scotch boilers, 17 feet 6 inches in diameter by 12 feet long, built at the Sparrows Point Plant, fitted with Howden's system of forced draft and with the Bethlehem-Dahl mechanical oil-burning system. There are two main feed pumps, of the Bethlehem-Weir vertical simplex type, 15½ inches by 11½ inches by 24 inches. The fuel oil service pumps for supplying oil to the oil burners consist of two 7¼-inch by 5-inch by 10-inch Bethlehem-Weir horizontal simplex pumps. The two fuel oil transfer pumps are also of the Bethlehem-Weir type, 7 inches by 8 inches by 18 inches, vertical simplex.

The steering gear consists of the standard Bethlehem 16-inch by 12-inch screw type direct connected to the rudder-stock through a spring-quadrant and tiller. All shocks between the rudder and engine are taken by the quadrant springs, which are so arranged that they are both in compression at the midship position and, therefore, instantly transmit any movement of the quadrant and screw gear to the rudder stock. The vessel can be steered from (a) the hydraulic telemotor located in the steering room, (b) a trick-wheel on the same deck as the gear, (c) steering column on the engine room casing, and (d) by hand wheels located at the forward end of the gear. Arrangements are also made for relief steering from a steam winch located on the poop deck, and for emergency steering, in case all other methods fail, lugs are fitted to each side of the quadrant so the rudder-stock can be operated by hand through cables attached to the lugs.

### Mooring Winches

Particular attention has been paid to the mooring winches. These are a special type, Bethlehem 10-inch by 12-inch compound geared, and six in number. Each winch may be set to produce any required resistance to the mooring line, up to steam pressure. In operation these winches pay out the mooring line when under excessive tension, the engine overhauling to do so, and when the tension becomes less the winch automatically takes up the slack and establishes a tension on the line as governed by the setting of the lever-operated piston throttle valve. The tension in the mooring line may also be resisted by means of a brake band, or compressor, mounted on the flange of the drum and controlled by a hand-wheel and screw. Two of these winches are located on the upper deck forward, two on the poop deck forward of the wing houses and two on the poop deck aft for stern lines. The port after winch has, in addition to the winding drum and warping gypsy head, two grooved drums on an extended shaft for relieving tackle.

Arrangement of piping aft of superstructure under bridge deck

A donkey boiler is located on a flat between the engine and boiler rooms at the lower deck level. The engineers' store rooms and workshop are provided on this same deck on the port side, and the refrigerating machinery is located on the starboard side. At the extreme after end of this deck are the meat room, chill room and butcher shop. Aft in the engine room, on a flat below the engineers' stores and work shop, is located the electric equipment, consisting of two 20-kilowatt generators, each driven by a 9-inch by 7-inch vertical reciprocating engine, with switchboard.

### Trials

On her trial trips, February 7 and 8, the Bethore more than met her requirements for speed. This vessel was designed for a speed of 11½ knots and over a measured mile off Kent Island developed a speed of 12.125 knots. A mean I. H. P. of 5557 was developed at 86.5 R. P. M. The performance of the ship on the trial trip was satisfactory in every respect.

On February 11 the Bethore was turned over to the Ore Steamship Corporation, and her maiden trip began February 25, when she cleared from Baltimore, Md., for Tuxpan, Mexico, to take aboard oil for Bayonne, New Jersey.

At the time of the delivery of the Bethore there were on the ways at the Sparrows Point Plant of the Bethlehem Shipbuilding Corporation, Ltd., the two similar ships, the Marore and Steelore.

The Bethore was launched on December 3, 1921, and was christened by Mrs. Charles M. Schwab. A number of officials of the Bethlehem Shipbuilding Corporation, Ltd., including Mr. Charles M. Schwab, chairman of the board of directors, and Mr. Eugene G. Grace, president, were present at the launching.

## RUBBER FOR STERN BEARINGS

The stern bearings of propeller shafts have always presented a problem to the marine engineer. Up to the present the most satisfactory solution has been a brass or bronze sleeve shrunk onto the steel shaft to protect it from corrosion, this sleeve running in babbitt or lignum vitae bearings. The Oliver Sherwood Company of San Francisco, noting the success which has attended the use of rubber bearings on oil well machinery, are advocating the use of these bearings for stern tubes and guaranteeing satisfaction from their use.

D. W. Dickie, San Francisco naval architect, and F. G. White, chief engineer of the Board of State Harbor Commissioners, authorized the use of these bearings on the launch recently finished for the Harbor Commission under the direction of D. W. Dickie. The tailshaft of this launch is 5 inches in diameter; the outside diameter of the sleeve is 5¾ inches; the stern tube bearing is 23 inches long.

# THE HUMAN ELEMENT IN MARINE ENGINEERING

### By W. P. LINDLEY

**Mr. W. P. Lindley, one of the old time marine engineers, gave a short talk at a recent meeting of the American Society of Marine Engineers, San Francisco. As his subject was of a somewhat different sort than the usual run of technical addresses, it is believed that the present article formed from an abstract of his remarks will be of interest to readers of Pacific Marine Review.**

**At the same meeting Mr. J. A. Kinkead gave a most interesting lecture on "Steel Manufacture," illustrating his remarks with sketches of the various methods and tests employed.**

**The American Society of Marine Engineers is working through its meetings for the elevation of the marine engineering profession.**

MANY articles have been written concerning the management and proper operation of the machinery of steamships. These writings have more than likely been of great benefit, as an interchange of ideas and explanations of different methods must of necessity tend toward a more efficient and perfect operation.

However, the human element has seldom or never been touched upon, as most technical publications have their columns filled with matter regarding the design and management of inanimate objects of mechanical construction. Neither has the engineering lecturer very often taken up the subject of betterment of men's morals, and the discussion of the personal equation of designers and operators has been mostly left to such societies and writers as specialize in moral things, leaving the more material ones alone.

Therefore these remarks are tendered you assembled here with an intention to be more along the lines of conduct and character than on engineering subjects. However, the two are in a way so interwoven that more than likely allusions will be made to the craft you practice and the mechanical lives you lead.

While not posing as a puritan or a preacher, it is believed that an engineer who leads a morally, mentally and physically clean life is a better man in his profession than he would be if he lived a besotted, vulgar and dirty existence. It is certain that a man can be a gentleman and a good engineer. It is not necessary to wear overalls buttoned about the waist and hanging slouchily, with a greasy silk cap on one's head and a yard of filthy wiping rag hanging out of the back pocket to signify to the world that you are an engineer. One of the best marine engineers I ever knew went into business for himself, and when he came aboard a vessel to take measurements for a job, it was a delight to the eye to observe him. Always spick and span, with a carnation in his buttonhole, he would take diameters of rods and stems, pitch of bolts, etc., jotting down his figures in a clean note book. He had a surety born of a confidence in himself and a perfect mastery of his business, together with the certainty that he knew he knew. Then when his work came back to the boat after completion it fitted with an exactness and nicety that made his particular product a coastwise standard which reflected the excellence of its maker as a man and a mechanic.

A habit of neatness can be cultivated by the engineer to great advantage. Neatness of quarters and person is a prime essential if a man wishes to rise in his work. We know that an engineer's duties are hot and tiring, but that is no reason why he should be untidy and filthy in his habits when off watch. What a reflection on an engineer it is to see his quarters strewed with dirty overalls, wet and greasy shoes, pieces of old packing, wads of wiping rags or waste, old socks, cigar and cigarette butts, half-burnt matches, befouled and tattered magazines, etc., etc. The superintendent seeing a place like this is not likely to put the occupant down for promotion.

Cleanliness of language is also an admirable trait. Profanity and vulgarity denote a paucity of ideas. Putting to one side the question as to whether religious or not, the constant use of profane and vulgar expressions is needless and foolish. This habit of speaking has become so fixed in many people that they unconsciously interlard every sentence with useless words. In fact, they seem unable to state an obvious fact in clear and concise language. All assertions are prefixed or suffixed with obscene, vulgar or profane expressions. A man should never use language at his work or among his companions that he would not use before his mother or sister, or any other fellow's sister, either.

We will now take up drunkenness. While it is presumed that this evil does not at present prevail to any great extent in United States ports, it is unfortunately a fact that many men do indulge to a great extent in places where alcoholic drinks can be had. To any engineer who has a desire to bemuse and befuddle his brains with booze, the advice given is—Don't. It is an evil habit, and one that in almost every case leads to trouble. High pressure steam, watertube boilers, oil fuel and the thousand and one units that go to make up the modern engine room plant do not mix well with booze. It also breaks down a man's health, and moreover, if he happens to dally on the primrose path while fuddled with drink, his punishment is nearly always certain, for the votary of Bacchus when entering the temples of Venus surely runs a big risk. This latter subject might be taken exception to in an address of this sort, but when it is known that fully 80 per cent of disease can be traced to such origin, it is surely not out of order to warn the sea-going engineer of the risks he runs and the price he will surely have to pay.

Dignity of conduct is also an asset. While an engineer officer need not envelop himself in a cloud of aloofness, he should not be too familiar with his subordinates. Democracy is admirable to a certain extent, but the playing of cards by engineers in the oiler's messroom will breed contempt and inattention to orders when given. Neither should an engineer permit watertenders and oilers to address him as "Bill" or "Jim", as the case may be. We all know that a former fashion made it imperative that watertenders, oilers, etc., should be members of the firemen's union, which at that time was also affiliated with the M. E. B. A. through the A. F. of L. This, it is submitted, was a great evil, and did much to lessen the importance of the engineer in the eyes of steamship operators. It was also productive of much trouble. Many years ago an attempt was made to bring these young men, who were later to be engineers, under the shelter of the Engineers' Association, making them apprentice members of that body. However, a majority of the old-time shovel engineers defeated the project. That the American Society of Marine Engineers has adopted the idea shows a desire on your part to elevate the status of the profession.

While the speaker has given considerable advice to the engineers, he does not wish you to think that they are the only ones that err. Most of the deck officers could take a lesson from what has been said. In fact, any and all officers who are vested with command of any sort should at all times so comport themselves that no criticism of their conduct could be justly made. This is not to assume that they must be "sissies" or milksops. They can be good clean-cut Americans, able officers in their several departments, and gentlemen at all times. Unfortunately, as Shakespeare says, "evil communications corrupt good manners," and in the past there has surely been a hodgepodge and mixture of nationalities on steamers under the American flag which was not calculated to bring out much in the way of decency in a man. Happily this state of affairs is now rapidly changing, and it is to be hoped that the fashions of the past will also change.

Finally, it might be well for the engineer who desires to advance in his profession to cultivate a habit of good reading. A well stored mind is a granary of value to anyone, and to the marine engineer is of special advantage. There are many hours at sea which are not required for sleep, and when one's mind need not be engrossed by work. If these spare hours are occupied in reading books of the better sort, the reader will in a short time have a fund of information at his fingers' ends that he can draw on at any time. When ashore he can join in conversations and show a familiarity with the topics of the day and other subjects of a scholastic nature that go far to make a man noted for good conversational powers. Good fiction is not alone entertaining, but is brain-building. Technical books and, in fact, a general combination of literature, both by ancient and modern authors, will tend greatly to impart confidence in the one who reads them carefully and thinks on what he reads.

# RADIO DIRECTION FINDER

## Its Application to Navigation

(Abstract of Bureau of Standards Scientific Paper No. 428)

SHIPOWNERS, radio operators, government departments and others are giving much attention to the importance of providing on shipboard radio direction-finding equipment by means of which the position of a ship can be quickly and accurately determined. This matter is receiving attention in various foreign countries as well as in the United States.

The radio direction finder is a device for determining in a simple manner the direction of a radio transmitting station with reference to the point at which the direction finder is located. The direction finder has a considerable number of very practical applications, of which one of the most important is its use as an aid to navigation.

The radio direction finder is not affected by fog, and has the further advantage that it will operate over much greater distances than sound and visual signaling devices.

The Department of Commerce has developed a system of radio direction finding which has proved to be very simple, practical and dependable. This system has been developed by the Bureau of Standards in co-operation with the Bureau of Lighthouses. The first installations were made in the Third Lighthouse District with headquarters at Tompkinsville, New York. A common type of direction finder which has been used for installation on shipboard consists of a coil of ten turns of insulated copper wire wound on a wooden frame 4 feet square which is mounted so that it may be rotated about a vertical axis. Suitable radio receiving apparatus is used in connection with the coil, and in recent installations has consisted of a variable air condenser for tuning purposes, a balancing condenser for increasing the accuracy of observed bearings, a six-tube amplifier having three stages of radio-frequency amplification, a detector, and two stages of audio-frequency amplification, batteries, and suitable telephone receivers.

As the coil is revolved about its vertical axis, the intensity of the signal which is being received from the station whose location is to be determined, diminishes until a minimum is reached, which occurs when the plane of the coil comes to a position at right angles to the line of direction to the radio transmitting station. At this point of minimum signal, the radio bearing is read on a suitable scale, which may be either a fixed scale or the card of a magnetic compass.

In developing this system of direction finding, the Bureau of Standards has made a study of the distortion effects which may result from the presence of adjacent objects, such as the mast of a ship, and methods of eliminating errors which such distortion may cause in observed radio bearings. A particularly careful study has been made of distortion effects on shipboard and methods for correcting for these effects by calibration.

The radio direction finder as used by the Department of Commerce involves a number of unique features. It is designed to be installed over the ship's binnacle carrying the magnetic compass card, so that the radio bearings are read directly on the magnetic compass card. An additional scale is attached to the top of the binnacle and marked with the corrections obtained by calibrating the radio direction finder.

The Department of Commerce has established three radio beacons at the approaches to New York harbor, on Ambrose light vessel, Fire Island light vessel, and at Sea Girt lighthouse, Sea Girt, New Jersey. These three beacons are now in regular commission and transmit waves of a frequency of 300 kilocycles per second (wave length=1000 meters). A radio beacon is being installed on San Francisco light vessel No. 70. These beacons have automatic transmitting equipment so that no operator is necessary.

The Bureau of Standards has recently issued a publication describing this system of radio direction finding. This publication shows numerous photographs of a radio direction finder of the type mentioned above, as installed on the pilothouse of a lighthouse tender. Actual courses are shown which were run by means of radio bearings taken by the ship's navigator on the three beacons at the approaches to New York harbor.

This publication is Bureau of Standards' Scientific Paper No. 428, "The Radio Direction Finder and its Application to Navigation," by F. A. Kolster and F. W. Dunmore.

# THE BLOW-OFF COCK

## A FIREMAN ANSWERS THE "FIRST"

IN reference to the article published in your September issue of 1921 on "What is wrong with the American merchant marine," I would like to say that the statement made by the writer of the article "that ships' officers have no ways or means of enforcing orders aboard vessels or that there seems to be a laxity on behalf of American consulates in various foreign ports of the world to co-operate with the ships' officials," can be placed in either one of these three lights: either the contributor of said article is prejudiced or inexperienced or narrow-minded.

From all apparent indications the writer has certainly not risen from the fo'c'sle. To begin with, no man, who has put in his time at sea as a sailor, fireman, messman or cook, could ever make a statement like that and feel that he was telling the truth. Not after knowing that his disregardance of any orders given him or the refusal of any duty will be met with a "log" or, in cases of a more serious nature, the "chain locker" and "irons". As far as the Jones or LaFollette acts are concerned, they might as well not be in existence for all the material good they are doing at present for the farers of the sea. Also, the rules of the unions, now as ever before, are a minor item.

Another thing that gives me reason to believe that the writer of the above-mentioned article is a man of limited seafaring experience, is that he thoroughly condemns certain laws permitting a man to "draw money in foreign ports and go ashore and get drunk and run with women and find all kinds of deviltry". Is it just now that sailors have taken to drinking and running with women? Hasn't it existed for years and years and scores of years? Haven't seafaring men almost standardized those conditions until they have become traditional, so to speak — almost as much as his work, his ship, his life? Isn't it a fact that such an environment has been and is the "lot" of the sailor, not only of this country, but of the world over? What would this "good Samaritan or self-appointed philanthropist of the sea" have us do? Does he want the sailor to change hundreds of years of work, life, conditions, traditions and everything that means anything to him and the little he gets—that is, to spend his few moments ashore as he sees fit? Would he change all of this in one fraction of a moment to please some silly little whim that has been created by a misconstrued concept of marine ethics?

The writer of the article in question started out to tell why our merchant marine is not a success and the only reason to which he has attributed our failure is to the conduct of the crews manning our vessels. Now, as I have said before, the sailors of this country are not the only participants in wild night orgies or drunken carousals quite frequently staged in foreign ports. Sailors of other countries (and I have seen many) are similarly inclined.

If there were any foundation, any prestige, or commonsense in back of that writer's theory, then every country in the world today would be a marine failure. That isn't saying much for the seafarer of the world, I'll admit, nor is it placing him on a pedestal to be looked upon and admired as an example in etiquette or conduct. I am familiar with the sailor's shortcomings and am ready to admit them and back him up to the limit, because it is not he that is to blame, but those who have placed him in that environment. These are the very ones who are now yelping and howling at the circumstances that they are responsible for.

Would you know who these guilty ones are? The answer is the public. Who would have thought, in days gone by, to open the door of his home to the sailor, to welcome him to decent society, to confer upon him the honor and privileges that are due and which are birthright of mankind. Who would have thought of these things years back? Would that writer, for instance, allow a stranger, a seafarer in his home—would he have permitted or, for a moment, harbored the thought of allowing this lone sailor, who was hungry for company, was wanting someone to talk to, was longing for the privilege of being in a decent home while in a strange port, was eager for a home-cooked meal, the kind that mother made or used to make (whichever the case was), after eating salt horse or pickled pork for months? Would the writer have done this for one of his brother seafarers? Well, if he would have done so, then he would not have been the man to write the article that he did. If he didn't put out a helping hand as he and thousands of others should have done, he has no right to complain. "As a man soweth, so shall he reap". I will grant that throughout the war and even now, the seaman has had access to several societies and clubs, such as Seamen's Service Center and community camp clubs, also church institutes and Y. M. C. A.'s. But, since when have these methods of reform been employed?

Would you expect, through the use of a few years of reform methods, to change habits and traditions that have taken generations to form? The sailor, having been denied the privileges of decent society, and, being human and wanting company and recreation, turned to the barroom, the gambling den and the house of prostitution.

Another part of that writer's argument, which I would like to bring to light and analyze (as the rest of his theory, I doubt, will stand the test), is the fact that throughout the whole article he plainly showed his contempt for the crew, for the under-dog, for the unlicensed man. Every fault, every misdemeanor, every act of violence was laid upon the men who man the ship, but nary a word was there said about bullying officers, drunken officers and incompetent officers.

But I will say that I have been shipmates with some of the young ones who use their heads for nothing more or less than a hat-rack, and have been shipmates with the old sour-faced, man-driving disciplinarians. Neither one is fit to be called ships' officers and neither one knows how to handle men to get the best there is in them. My contention is that to make a success of anything that depends on the co-operation of human nature, is to work with human nature and not against it. Browbeating and condemning is not working with human nature and that is what that writer is doing, condemning the ones he should be trying to help, enlighten and assist in every possible way.

# A NEW UNSINKABLE SHIP

THE illustration herewith shows a new cellular type of hull construction designed and patented by Captain C. McDonald, marine superintendent of the Union Steamship Company of New Zealand.

It is claimed for this design that the vessel can very handily be kept afloat with the entire bottom removed. The designer deserves considerable credit, because he accomplishes this very desirable safety feature and at the same time preserves the simplicity of construction so as to add very little to the cost of building. 'Tween deck compartments and the hold trunks are so arranged that sufficient buoyancy with adequate freeboard is available through the displacement of the 'tween deck compartments, even if the entire bottom should be cut off.

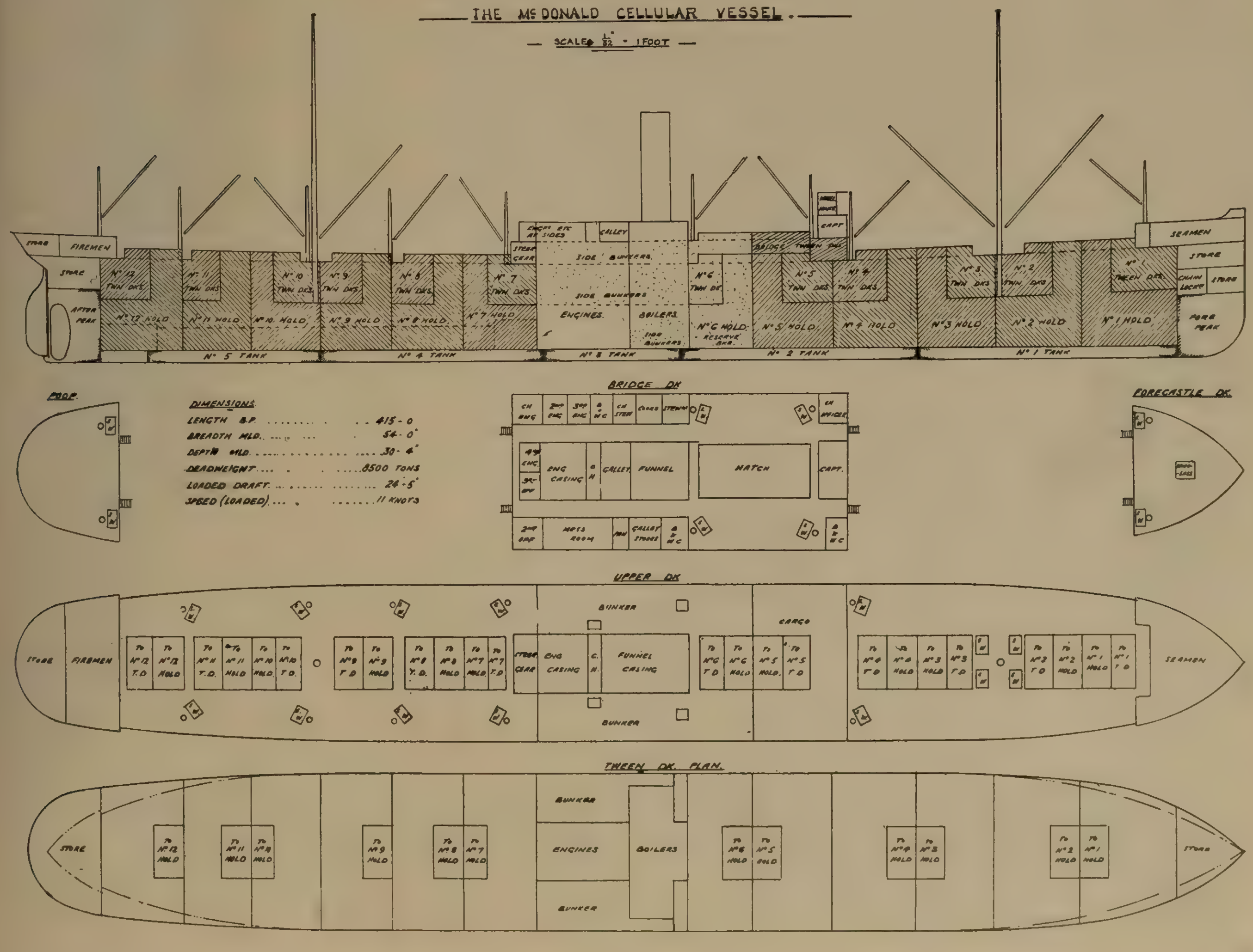
A pamphlet describing this vessel gives complete specifications for a single-screw steel steamer built on this principle for 8500 tons deadweight cargo capacity on a mean draft of 24 feet 5 inches.

The scantlings for a hull built to these specifications would all be sized to standard dimensions and classification rules. Frames in way of 'tween deck spaces are cut and bracketed to insure a perfectly watertight job, so that with the 'tween deck compartments placed in the position shown on the inboard profile the vessel would have ample buoyancy with the entire bottom destroyed.

All ventilators from the weather deck to lower holds have to be strongly constructed with standard deck scantlings and with a watertight riveting job. The scuppers of the 'tween deck compartments leading to the bilges of the ship are all fitted on the cone system, with caps controlled by screw rods from the weather deck. With a strongly built watertight tunnel shaft and with ventilator for same built of heavy scantling and a good watertight job, such a hull could navigate under its own steam with injuries to her bottom fore and aft which would absolutely sink the ordinary cargo carrier.

This construction of hull lends itself very readily to the rapid discharge of general cargo, on account of the large number of hatches and the possibility of working separate stevedore gangs in the 'tween deck compartments and in the hold. It may also be readily adapted for longitudinal framing and for the carriage of crude oil or other bulk cargoes.

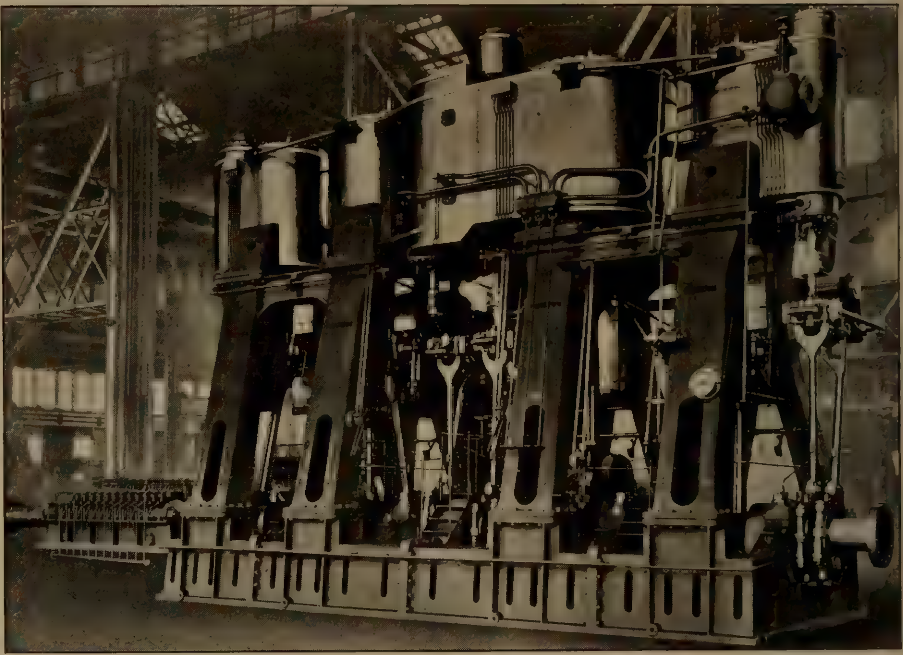
Many designs have been patented during the war and since for making hulls safe after submarine attack or other injury. In large part these designs have been the work of minds entirely unfamiliar with sea conditions or with the construction of vessels. Captain McDonald seems to have arrived at a very simple and efficient scheme for a practically unsinkable ship and his idea is commended to the consideration of American naval architects.



# QUADRUPLE EXPANSION ENGINE

## Details of Machinery, Equipment and Trial Data From the Southern Pacific Oil Tanker Tamiahua

By HENRIK GREGER*



Quadruple expansion engine for the Tamiahua on the test block

THE continued demand for oil in the past few years gave impetus to the great activity in the building of tanker tonnage by many of the various oil companies.

The Southern Pacific Railway Company, which uses oil-burning locomotives exclusively and has a large number of oil-burning vessels, recently added to its fleet the S. S. Tamiahua built by the Moore Shipbuilding Company of Oakland, California. The vessel was designed and constructed under the supervision of A. S. Hebble, superintending engineer of the Southern Pacific Company-Atlantic Steamship Lines, and represents the most advanced ideas and practices in tank ship design.

The vessel has a total deadweight carrying capacity of 17,200 tons and is of the following general dimensions:

| | |
|---|---|
| Length overall | 516 ft. 4 in. |
| Length between perpendiculars | 500 ft. |
| Depth molded | 39 ft. |
| Beam molded | 71 ft. |
| Mean draft | 29 ft. 3 in. |
| Speed | 11 knots |

The propelling machinery located aft consists of a vertical inverted quadruple expansion engine built by the Hooven, Owens, Rentschler Company, Hamilton, Ohio, especially designed for the vessel and embodying all the principles necessary for economic and efficient operation.

### Boilers

Steam is furnished by three single ended Scotch boilers 15 feet 9 inches diameter, 12 feet long, of a total heating surface of 10,200 square feet, with straight type Morrison furnaces and individual combustion chambers; are fitted with oil burners and forced draft of 48,000 cubic feet capacity. The donkey boiler has a heating surface of 600 square feet. The main condenser has a cooling surface of 11,000 square feet and the auxiliary condenser a cooling surface of 6000 square feet.

### Oil Pumps

Two main cargo oil pumps, horizontal duplex compound, size 19-30-16½x24. These pumps are the largest cargo pumps ever installed on a tanker and are each capable of discharging 3500 barrels per hour.

Stripping pump, vertical duplex, size 16x10x18. Drainage pump, vertical duplex, size 7½ x 9 x 10. Fuel oil pumps, horizontal duplex, size 7½x5x10.

### Miscellaneous Auxiliaries

Two 15 K. W. generator sets; feed water heater No. 30 Reilly multicoil; 2 35-ton evaporators; 1000 gallon distiller; 3-inch twin grease extractor; 2 Metropolitan injectors.

### Main Engine

The size of the main engine is 27½-40-59-86x54 inches stroke, developing 4200 indicated horse power at 75 R. P. M. with boiler pressure of 220 pounds.

The arrangement of the cylinders is as follows: forward to aft, high pressure, low pressure, second intermediate, and first intermediate. The cranks are balanced on the Yarrow Schlick Tweedy System offsetting the angles from the usual 90 degrees. This arrangement of the cylinders simplifies the receiver piping and reduces condensation to a minimum.

Steam tanker Tamiahua

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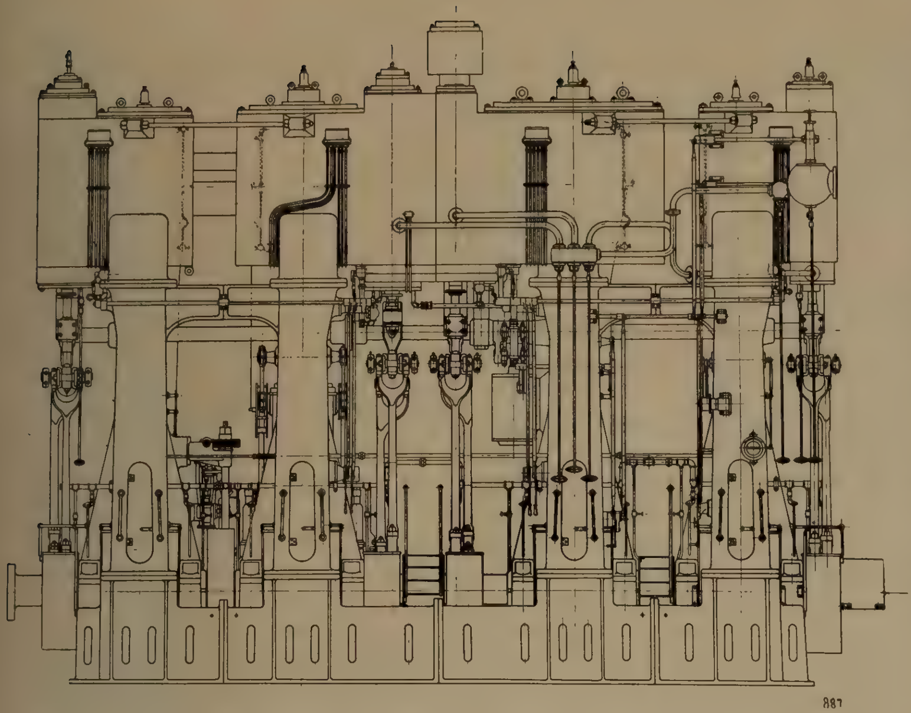
* Chief engineer, marine department, Hooven, Owens, Rentschler Company, Hamilton, Ohio.



Line elevation of the quadruple expansion Hooven, Owens, Rentschler engine of 4200 i. h. p. at 75 r. p. m. on 220 pounds pressure, as installed in the S. S. Tamiahua

The high pressure, first and second intermediate cylinders are fitted with piston valves, the low pressure cylinder with balanced slide valve. All piston valves are fitted with plain balance pistons on top and the slide valve is equipped with a Lovekin balance piston to counteract unbalanced weight and inertia of valve gear parts. The valves take steam as follows: high pressure, first and second intermediate inside and low pressure outside. The pistons for the high pressure and first intermediate cylinders are made of cast iron, the second intermediate and low pressure cylinders of cast steel. The low and second intermediate cylinders are bolted together with the high pressure and first intermediate at either end and held by tie rods. This arrangement gives interchangeability to the crank shaft section, and eliminates outside receiver piping between second intermediate and low pressure cylinders. The high pressure and first intermediate cylinder receiver pipes are made of copper fitted with expansion joints, which are provided with drain pockets for removing condensation.

The housings are box shaped, of cast iron and arranged independently for each cylinder. Flanges for belting to bed plate and cylinders are liberally proportioned. Where cylinders are independent, such as high pressure and first intermediate, the housings are bolted together fore and aft for rigidity. The crosshead guides are independent and bolted to the face of the housings; they are provided with water circulation. The bed plate is made of cast iron in four sections bolted together. Cross girders heavily ribbed provide recesses for main bearings. The bottom of the bed plate is flat for bolting to the ship structure.

The air and bilge pumps are bolted to the second intermediate back housing and bed plate and driven through beam from the crosshead. The reverse engine of the single ram type is located on the aft side of low pressure back housing. The turning engine of the double cylinder type is bolted to forward side of first intermediate back housing. The thrust is of the horseshoe type with bearings at each end; it rests on separate casting forming foundation in line with bed plate.

### Construction Details

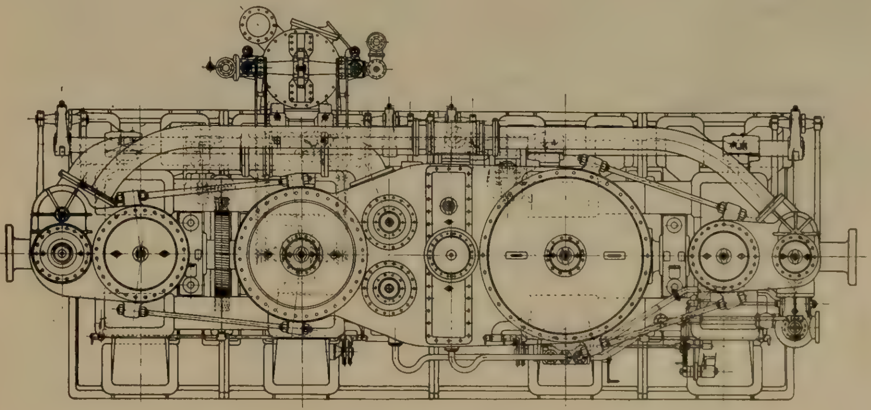
The usual marine construction was followed in the main parts. All working surfaces were made of very liberal proportions so as to assure smooth and cool operation at all times. The crosshead construction is of the double slipper type with babbitted cast iron slippers bolted to the crosshead, the go-ahead side being on the back housing. The connecting rods are of the forked type with cast steel babbitted boxes on crank end and bronze babbitted boxes for crosshead end, the usual provisions being made for providing taking up wear in all bearings.

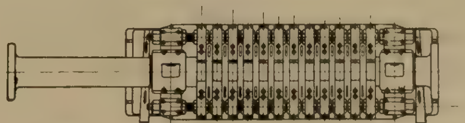
The main bearing construction consists of lower bronze babbitted box with steel casting babbitted cap, both fitted snugly into recess on bed plate. The lower box is cored for water circulation.

The crank shaft is built up in sections with crank pins and shaft section shrunk onto the forged webs. The shaft is made in four interchangeable sections held together with reamed bolts.

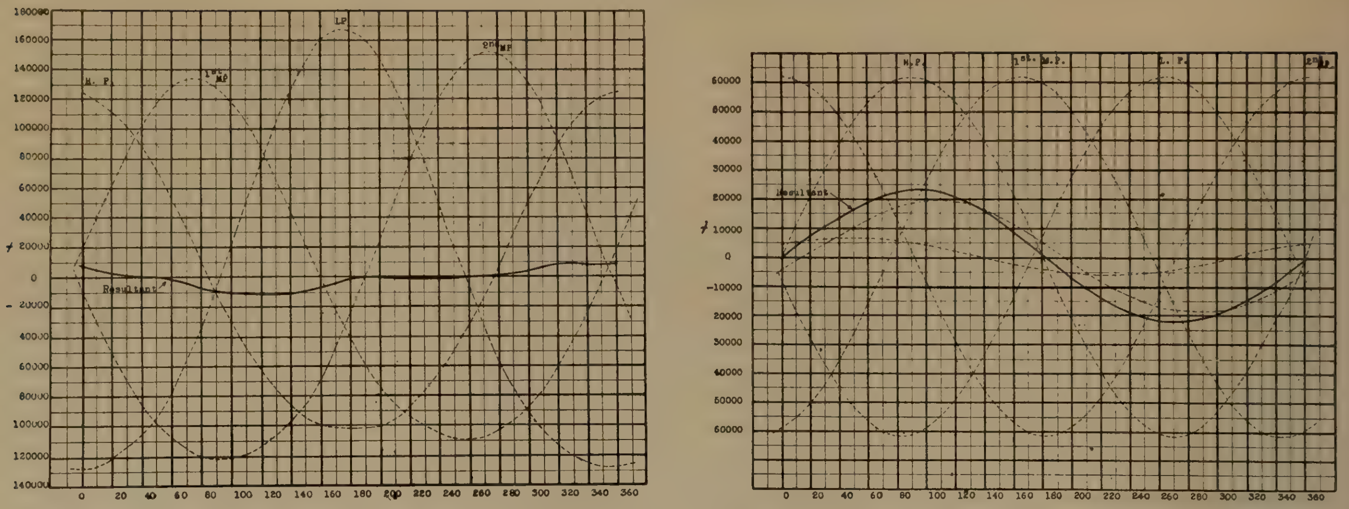
### Valve Gear

The valve gear is of the Stephenson link type. The eccentric sheaves are of cast iron in halves keyed to the shaft and held together by fitted bolts. The eccentric straps are of cast steel with babbitted face and fitted with shims for taking up wear. The eccentric rods have bronze boxes for attachment to links. For "going ahead" the eccentric rods are arranged for "crossed rods"





Plan of Tamiahua's engine and thrust block



Curves showing vertical and horizontal inertia forces of cylinder and valve gear rotating and reciprocating parts on the engines of S. S. Tamiahua

using long drag rods for connecting the links with the reverse shaft. The reverse shaft is located on the back of the engine and supported by babbitted bearings to the housings.

The reverse levers are of cast steel keyed to the shaft and fitted with slotted arrangement for adjusting cutoffs. The valve stems for the second intermediate cylinder, having two valves, are connected by a steel casting crosshead fitted with bronze liners operating on guides bolted to the cylinder. The reverse engine is bolted to the low pressure back housing. In order to avoid the usual long overhang, a scheme of bringing the cylinder close to the housing was evolved by a double link arrangement, and to absorb the extra thrust due to the short links a double guide bar was used. The follow up gear operating the slide valve is connected with the handling gear.

### Attached Auxiliaries

The turning engine is of the double cylinder type fitted with Stephenson reverse links. It operates the main shaft through a double set of worm gearing. The disengaging is done by moving worm out of gear with wheel on main shaft.

The air pump is of the Edwards single acting type driven from the main crosshead through beams. The pump body is of cast iron with removable bronze liner and cast iron bucket with bronze follower. The valve deck is of bronze with valves of excelsior fibre. The valves are accessible through inspection door on the side of pump body. The bucket rod of steel is attached to crosshead, which is guided by vertical brackets bolted to pump cover.

The bilge and sanitary pumps are bolted to the air pump, and the plungers are attached to the air pump crosshead. The bilge pump is fitted with leather clap valves and the sanitary pump with rubber valves. Air chambers and relief valves are provided as required for smooth operation and insurance against excessive pressures.

### Handling and Operating Gears

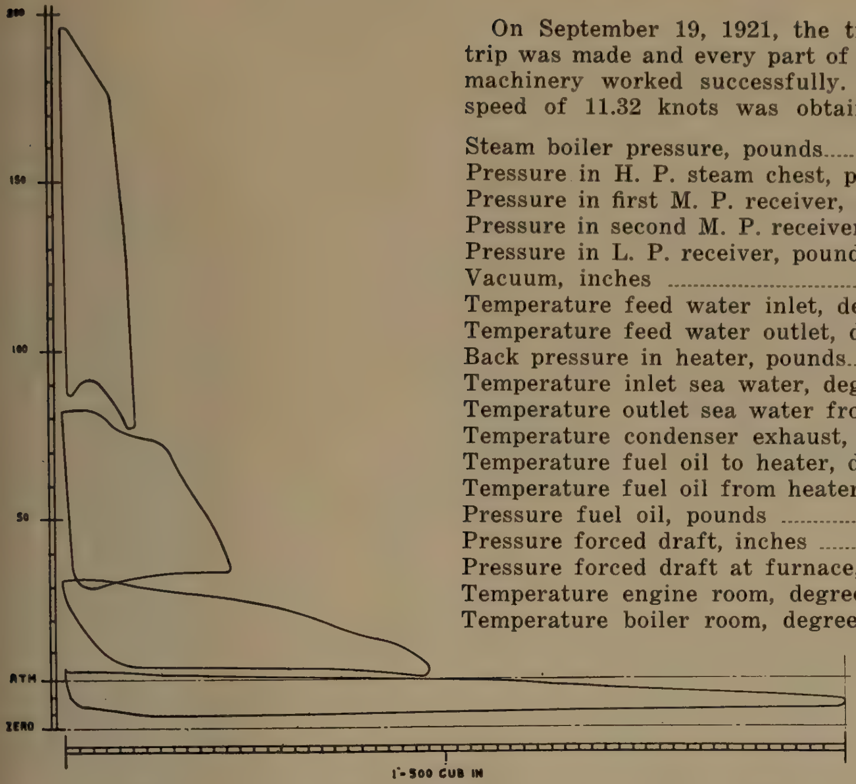
The throttle valve is of the double beat balanced type fitted with Monel metal seats. For quick control a butterfly valve is placed in the valve body close to the cylinder. The steam chests of all cylinders are connected with the throttle for live steam connections. Operating levers for throttle, reverse and drains are located on starboard side and centralized around low pressure housing within easy reach for the operator.

The oil cups for reciprocating parts are located on the front side of the cylinders and connected to the proper bearings through pipes. Small bearings are provided with cups for hand oiling and main bearings with wick oilers.

Water service from sea is supplied for shaft bearings, eccentrics and thrust shoes. The guides are water cooled, by connection to the sanitary system. Ample provision is made for protecting the operators against the moving parts by guards rails and cover, and steps are fitted over shaft at convenient places. The eccentrics operate in oil-tight pans. Relief valves are fitted to the top and bottom of all cylinders and on all valve chests. There is also a system of drain piping attached to cylinders and chests connected to condenser or feed water system. The drain valves are operated from the lower grating.

### Detail Dimensions

| | |
|---|---|
| Diameter and width eccentrics | 33x5¼″ |
| Diameter and length eccentric rod pin | 4x4″ |
| Diameter of eccentric rods, top and bottom | 3⅝″–4⅝″ |
| Diameter and length drag link pin | 3x3½″ |
| Width and height of link bar | 2x6½″ |
| Diameter and stroke reverse engine | 16x25″ |
| Diameter reverse shaft | 8″ |
| Diameter and stroke turning engine, double | 6x6x6″ |
| Diameter thrust shaft | 16″ |
| Diameter and number collars thrust shaft | 27″–12 |
| Thickness thrust collars | 2½″ |
| Diameter and number coupling bolts | 2¾″–12 |
| Diameter crank shaft | 16″ |
| Diameter and length main bearings | 16x17″ |
| Diameter and length crank pin | 16¼x16½″ |
| Diameter and length crosshead pin | 8x9″ |
| Length centers connecting rod | 120″ |
| Diameter connecting rod, top and bottom | 7″–8″ |
| Length and width crosshead slipper | 30x18″ |
| Diameter H. P. piston valve, top and bottom | 12″–11½″ |
| Diameter first M. P. piston valve, top and bottom | 21″–20½″ |
| Diameter second M. P. piston valve, top and bottom (2) | 21″–20½″ |
| Diameter piston rod | 7½″ |
| Diameter valve stem stuffing box, guides | 4½–5″ |
| Lineal clearance cylinders, top and bottom | ½″–⅝″ |
| Diameter steam pipe | 10″ |
| Diameter exhaust pipe | 30″ |
| Diameter and length link block pin | 5x5½″ |



Indicator diagrams from the four cylinders of the engines of S. S. Tamiahua

On September 19, 1921, the trial trip was made and every part of the machinery worked successfully. A speed of 11.32 knots was obtained on 28 feet draft with an indicated horsepower of 3615 at 70 revolutions.

Observations during trial were as follows:

| | |
|---|---|
| Steam boiler pressure, pounds | 218 |
| Pressure in H. P. steam chest, pounds | 192 |
| Pressure in first M. P. receiver, pounds | 86 |
| Pressure in second M. P. receiver, pounds | 31.5 |
| Pressure in L. P. receiver, pounds | 5 |
| Vacuum, inches | 24 |
| Temperature feed water inlet, degrees | 122 |
| Temperature feed water outlet, degrees | 194 |
| Back pressure in heater, pounds | 5 |
| Temperature inlet sea water, degrees | 55 |
| Temperature outlet sea water from condenser, degrees | 118 |
| Temperature condenser exhaust, degrees | 132 |
| Temperature fuel oil to heater, degrees | 62 |
| Temperature fuel oil from heater, degrees | 202 |
| Pressure fuel oil, pounds | 150 |
| Pressure forced draft, inches | 1¼ |
| Pressure forced draft at furnace, inches | .4 |
| Temperature engine room, degrees | 81 |
| Temperature boiler room, degrees | 88 |

During the trial trip a check was made on the fuel consumption, which showed 11.8 barrels of oil per hour equivalent to .94 pound per indicated horsepower hour.

The builders' guarantees, both as to speed and economy, were fulfilled by liberal margins.

### Maiden Voyage

The Tamiahua left San Francisco on September 29, 1921, on its maiden voyage to New Orleans by the Panama Canal. Great interest had been evidenced in this ship being the largest merchant vessel ever built on the Pacific Coast of the United States or, in fact, on the West Coast of the western hemisphere. It is also the largest deadweight tonnage of any ship that ever sailed out of the port of San Francisco or into the ports of New Orleans and Galveston, which are among the most important seaports of the United States.

The reputation long established by West Coast shipbuilders was further vindicated by the wonderful success of the Tamiahua.

The voyage to Panama was uneventful, as everything worked smoothly, the engine operating without vibration or any sign of heating of the bearings. The ship was water ballasted to 18 feet mean draft and maintained an average speed of 10½ knots, with engine developing 2725 I. H. P. at 61.9 revolutions. Sounding of the tanks indicated an oil consumption of .927 pound of oil per indicated horsepower hour, with all oil consumed by engine and auxiliaries charged to main engine horsepower. Allowing for auxiliaries this gives .86 pound of oil per indicated horsepower hour used by the engine alone.

From Panama the ship proceeded to New Orleans under an average speed of 11 knots with engine developing 3100 indicated horsepower at 65.9 revolutions. Fuel consumption from sounding indicated .96 pound of oil per I. H. P. hour with all oil used charged to main engine, or .89 pound deducting for auxiliaries. The oil used was 18.9 Baume gravity.

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The vessel recently made a voyage from Port Lobos, Mexico, to Philadelphia and delivered at the latter port 115,092 barrels of 20 gravity oil. The distance covered on the voyage was 2010 nautical miles with average revolutions of the main engine 65, indicating 3255 horsepower, including auxiliaries. Fuel consumption per hour indicated horsepower, including auxiliaries, .948. The oil used was Mexican crude of 12 Baume gravity with caloric value of 17,400 B. T. U. Total oil consumption per day was 33.07 tons and the average speed 10.63.

The test was made and the Tamiahua has taken its place in the American merchant fleet as one of the most economical ships of its kind.

The two-masted brigantine Garibaldino I, the first sailing ship built and owned by the Workers' Co-operative Union, the Maestri d'Ascia e Calafati of Italy. The length over all is 103.3 feet, the beam 27.2 feet, and molded depth 13.6 feet. The registered net tonnage is 500. She will be put in service between Mediterranean ports and the Antilles.

# THE MANUFACTURE OF SEAMLESS TUBING

## A Century of Experience and Latest Scientific Methods Applied to Manufacture of Seamless Tubing

### By PHILIP DAVIDSON*

THE Scovill Manufacturing Company of Waterbury, Connecticut, established in 1802, had been making brass mill products and manufacturing brass goods for over one hundred years when it decided to manufacture seamless tubing. The most exacting material is that used in surface condensers in connection with power plants, both stationary and on board ship. Some idea as to the amount of metal and the money involved in a large surface condenser can be obtained if one realizes that some of the largest ones made carry as many as 10,000 tubes, weighing over 110,000 pounds, the metal cost of which is approximately $25,000. To this must be added the cost of installation. If the tubes should fail prematurely on account of imperfections in the metal or improper manufacture, it will readily be seen that the loss in money is very great, aside from the inconvenience in shutting down the plant and re-fitting the condenser with new tubes.

Before going into the manufacture of tubing, the Scovill Manufacturing Company investigated as many condenser tube failures as it was able to come in contact with, in order to study the requirements of a good condenser tube. By learning the causes of tube failures, and profiting by the mistakes of others, this company feels that it is in a position to meet the most exacting demands of condenser tube construction.

The modern method is to use metallography in diagnosing metal ills. Metallography is the study of the internal structure of metals and alloys and its relation to their physical and mechanical properties. In a way, the metallographist bears the same relation to metals as a diagnostician does to human patients, with this exception, that a doctor can bury his mistakes while mistakes usually bury the metallographist. Again, when a doctor questions a patient, he sometimes gets a reply of sufficient length to write a satisfactory prescription; in the case of metals, the answer is always a silent one.

### How Metals Are Investigated

A metallographist employs a microscope for studying the structure of metals in a similar way that a bacteriologist does, only his technique is necessarily different. For example, when the bacteriologist suspects the presence of a certain germ, he inveigles his suspect into a sterile test tube, feeds it well, puts it into a nice warm incubator and lets it raise a large family. Then the bacteriologist makes a raid on the colony and drags them out on a glass slide, pours some sort of a dye upon them and later examines the dyed villains at his leisure. The specimen is illuminated by passing a beam of light through it, and since it is translucent, the image obtained resembles a positive X-ray print. In the case of metals, which are opaque substances, one must look at them by reflected and not by transmitted light. This explains why the regular biological microscope is not suitable for examining metals. The great difficulty is to illuminate the metal specimen, and when one considers that the objective almost touches the specimen when it is examined at high magnifications, this difficulty would seem almost insurmountable.

For a long time it seemed that the study of metals would be confined to the examination of their fractures with a hand glass. Unfortunately, however, fractures of metal are in many cases misleading and do not indicate the true structure of the metal. When the sage of metals began to hide behind a set of whiskers and a pair of shell-rimmed spectacles, in order to conceal his profound ignorance, the situation was saved by a Frenchman, named LeChatelier. He modestly brought forth a microscope so cunningly devised that a beam of light from an external source, such as a gas lamp or arc light, was deflected through the objective by means of a prism, illuminated the object, and was then reflected back into the eye piece by passing for a second time through the objective. The invention of the LeChatelier microscope has done for metals and alloys what the ordinary microscope has accomplished for bacteriology and medicine.

In order to prepare a specimen of metal for microscopic examination, a section about ¾ inch square is sawed off and is ground flat on one side with various grades of flour emery. It is then carefully polished with the finest polishing material obtainable on a revolving disc covered with broadcloth. The polished specimen is then treated with some corrosive chemical in order to dis-

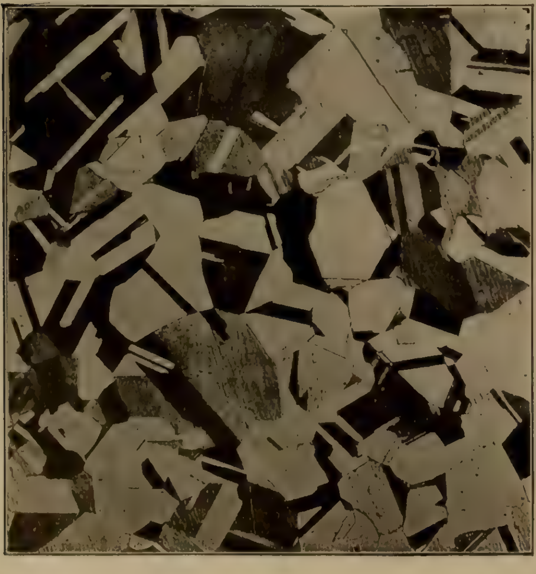

Fig. 2, at left. The microstructure of dead soft drawing brass; magnified 75x. Etch. $NH_4OH+H_2O_2$.

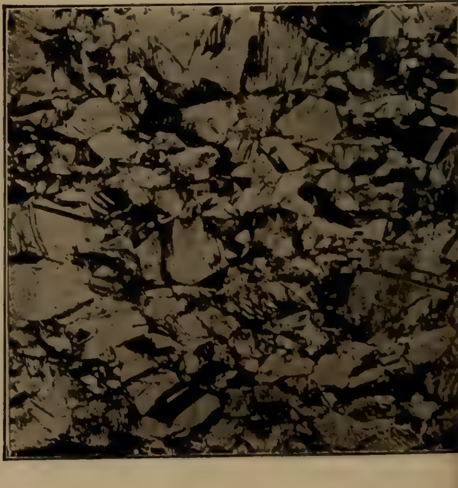

Fig. 3, at right. Hard rolled brass; magnified 75x. Etch. $NH_4OH+H_2O_2$.

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*Metallurgist, Scovill Manufacturing Company.

solve away the surface layer of the metal and to reveal its structure. This is known as etching.

That the microscope reveals the presence of surprisingly novel structures and designs, can be seen from the micro-structure of a piece of common high dead soft brass shown in Figure 2. The variety in shape and shading of the various crystals would lead one to believe that it is a reproduction of a cubist picture such as aroused much comment in art circles several years ago.

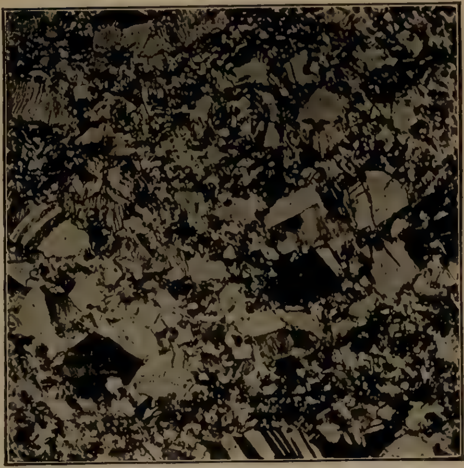
Fig. 4.—Partially recrystallized brass, magnified 75x. Etch. $NH_4OH+H_2O_2$.

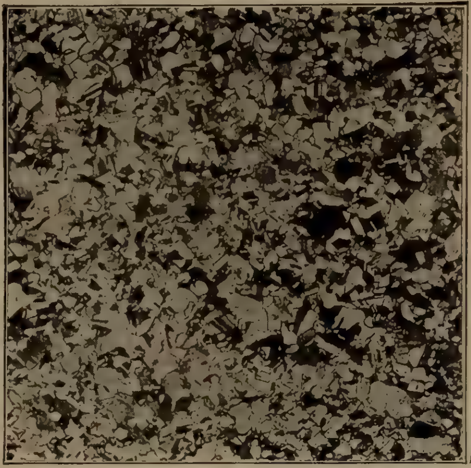
Fig. 5.—Completely recrystallized brass, fine grain structure, magnified 75x. Etch. $NH_4OH+H_2O_2$.

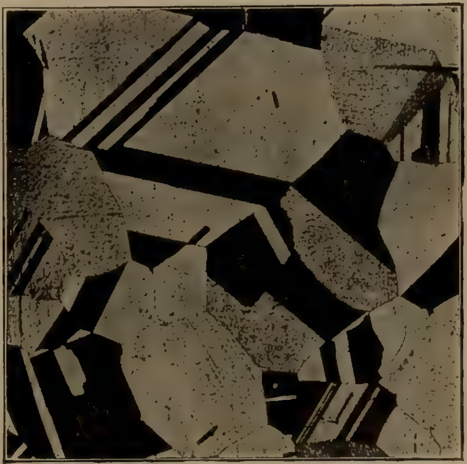
Fig. 6.—Completely recrystallized brass, coarse grain structure, magnified 75x. Etch. $NH_4OH+H_2O_2$.

### Are Metals Alive?

Some alloys respond to heat treatment in an almost uncanny manner. This is well illustrated by the brasses. Hard rolled brass, when treated at various temperatures, will recrystallize, the crystals or grains growing in size with rise in temperature variable at will. This power of being able to reproduce crystals, thus changing from a hard material to a ductile one, is actually a sort of life, and is confined to metals and alloys, but is not existent in such common materials as wood and stone.

When metals are subjected to cold working, viz., rolling or drawing, movement takes place along the cleavage planes in the crystals and along the crystal boundaries causing the crystals to become distorted or elongated, but no fracture occurs unless the metal is over-worked. The hardness produced by cold working can then be relieved by heating the metal and causing it to recrystallize. Recrystallization is accompanied by softness, and makes the material once more fit for further cold working. Figure 3 illustrates the structure of a piece of hard rolled brass—note the elongated crystals or grains. Figure 4 shows the change in structure that had taken place when a piece of the same material illustrated by figure 3 was heated at a slightly elevated temperature. Note that small grains have grown between the originally elongated ones. In other words, partial recrystallization had taken place. Figure 5 shows what happened when the metal illustrated by Figure 3 was heated at a moderately high temperature. You will see that the material has completely recrystallized. Figure 6 shows a coarse grain resulting from a bright red heat.

Some metals and alloys can be hot worked, recrystallization taking place during the hot working, and imparting ductile properties. Since every change in property is accompanied by a corresponding change in microstructure, it is not surprising that metallography has become of the highest importance in studying the behavior of metals.

**(To be continued)**

## ATLLANTIC REFINING COMPANY TANKER R. D. LEONARD

ANOTHER vessel was added to the Atlantic Refining Company's fleet when the turbine driven single screw tanker R. D. Leonard was delivered to that company by the Harlan Plant, Wilmington, Delaware, of the Bethlehem Shipbuilding Corporation, Ltd., on February 17, 1922.

The ship is in accordance with Lloyd's 100 A-1 class for vessels to carry oil in bulk. The total carrying capacity is about 2640 tons deadweight on a mean draft of 17 feet 1⅞ inches, with an oil cargo capacity of about 2450 tons.

The principal particulars of the vessel are as follows:

| | |
|---|---|
| Length overall | 276′ 10″ |
| Length between perpendiculars | 266′ 0″ |
| Beam molded | 39′ 0″ |
| Depth molded | 20′ 0″ |
| Type of engine | Turbine |
| Boilers | Babcock & Wilcox |
| Number of boilers | Two |
| Steam pressure, pounds | 225 |
| Kind of fuel | Oil |
| Speed on trial trip, knots per hour | 9.68 |

The propelling machinery consists of a single De Laval steam turbine, with double reduction gears, capable of developing 750 shaft horsepower normal at 95 revolutions per minute, and 900 shaft horsepower maximum at about 101 revolutions per minute. The Bethlehem-Dahl mechanical oil burning system is installed, operating under either natural or forced draft.

The oil pumping machinery consists of the following: Two vertical duplex compound cargo pumps, 7-inch by 12-inch by 10-inch by 12-inch stroke; fuel oil transfer pump, horizontal duplex type, 6-inch by 5¾-inch by 6-inch stroke; and two fuel oil service pumps, horizontal duplex type, 4½ inches by 2¾ inches by 4 inches.

Main feed pump and general service pumps are both vertical simplex, 10-inch by 6-inch by 18-inch stroke.

The deck machinery was built at the Moore Plant of the Bethlehem Shipbuilding Corporation, Ltd., at Elizabeth, New Jersey, and consists of a 7-inch by 7-inch spring quadrant type steering gear with horizontal engines; an 8¼-inch by 8-inch spur-gear windlass; and a 6¼-inch by 8-inch steam self-contained gypsy-capstan.

# STEAM PILOT BOAT MARYLAND

THE new steam pilot boat Maryland, built for the Association of Maryland Pilots at the Tebo plant of the Todd Shipyards Corporation from designs and specifications of Cox & Stevens, was given a successful trial trip at sea off New York harbor on March 29, when all the contract requirements were fully met.

The dimensions of this vessel are:

| | |
|---|---|
| Length over-all | 150′ 0″ |
| Length bet. perpendiculars | 140′ 3″ |
| Beam molded | 25′ 0″ |
| Depth molded | 15′ 7″ |

### Hull Construction

The construction of the hull of this vessel was originally commenced as a steam trawler, designed by Cox & Stevens, and was purchased in an incomplete condition by the Association of Maryland Pilots, which retained the original designers to revise the plans of the vessel and construct and equip her in every particular as an ideal pilot boat.

Her appearance is extremely pleasing. She shows seaworthiness in every line; her proportions are good; in short she is a staunch, smart-looking craft.

The hull is constructed of steel in excess of Lloyd's requirements. The vessel is flush deck with straight stem and turtleback forward and well proportioned elliptical stern aft. Freeboard is ample and the sheer unusually lively.

There is a continuous steel deckhouse on the main deck; the machinery is amidships. There are two pole masts, and at the forward end of the main deckhouse there is a pilot house containing captain's room and navigating rooms providing enclosed space for those at the wheel in bad weather.

The engine, which is of the compound type with cylinders 18 inches and 38 inches in diameter with 26-inch stroke and developing about 650 horsepower, swings a 9-foot 6-inch propeller. It is supplied by steam from a Scotch boiler 14 feet 6 inches in diameter by 12 feet long, having three furnaces and 2500 square feet of heating surface.

### Accommodations

At the after end of the main deckhouse is a large smoking room comfortably furnished with tables, seats, etc., and communicating directly with the pilots' living quarters, which are on the deck below. Forward of this smoking room on the starboard side is the chief engineer's stateroom, and on the forward side a stateroom for the assistant engineer. Both communicate directly with the machinery space, which is just forward of the staterooms.

The steering engine is located on the main deck just forward of the machinery compartment.

Forward of the boiler enclosure is the galley and the pantry, and at the extreme forward end of the house is the main room, which is handsomely furnished and of sufficient size to permit ample accommodations for pilots.

The space under the turtleback forward contains the capstans and also the lavatories and toilets as well as storerooms for deck supplies and other equipment.

At the after end of the main deck over the quadrant are fitted large stern gratings and a very heavy towing bitt, as well as the usual equipment of chocks, bollards and cleats.

Below deck the pilots' main living quarters occupy the after part of the vessel and are unusually large and comfortably arranged. In this compartment are accommodations for sixteen pilots, each having a separate bunk and locker space for clothes. A bathroom is provided as well as storeroom space and baggage room.

Between the engines and boilers there is a large cross bunker through which there is a communicating tunnel, permitting the engine room force to have access to fire room and vice versa, there being in addition large side bunkers abreast the boiler.

Below, forward of the boiler room, are the quarters for the crew proper and also accommodations for apprentices. On the starboard side is a large refrigerator with the ice machine room adjacent. There are also staterooms for stewards, messmen and cabin boy. On the port side are staterooms for the oilers and firemen as well as a large storeroom for provisions.

In the lower forecastle, which is arranged for apprentices and for additional members of the crew, are ten berths with the usual transoms and clothes lockers.

Forward of this space again is a storeroom with chain locker underneath. The windlass is of the Hyde type with 4½-inch by 6-inch engines, wildcats being arranged for 15/16 inch diameter of chain.

The vessel is lighted by electricity, there being 10 kilowatt generator and storage batteries, the system arranged for 110 volts.

The ice machine is a one-ton Brunswick, which is of ample size.

The Maryland has a donkey boiler, and all quarters are heated with steam.

As the service to which the pilot boat is to be put requires a staunch vessel capable of riding out the most severe storms with safety and comfort to those on board, it is essential that any vessel designed for this purpose should in every sense be staunch and seaworthy as well as comfortable for those on board.

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### ERRATA

In January issue the caption under cut upper left column, page 7, should read "The ship Thomas Stephens" (not Stevens).

On the insert in March issue, showing official list of marine railways, item Winslow Marine Railway and Shipbuilding Company, figures in column under "length" should be 325′-6″ instead of 225′-6″. This one is up to United States board of engineers for rivers and harbors.

In the April issue, article "Building Floating Dry Docks," the last three lines on page 238 should read, "437 feet with a width of 110 feet, and a total length of the wing walls of 377 feet." The description of the motors, third column, page 239, should read 440-volt instead of 450.

Tanker R. D. Leonard, recently delivered by the Harlan Plant of the Bethlehem Shipbuilding Corporation to the Atlantic Refining Company. For description see page 315

# IN THE GRAVEYARD WATCH

The Anthropocentric World
The Small Capital
Boys Will Be Boys
Chinese Junks
The King of Canoes

WHAT AN ANTHROPOCENTRIC WORLD this is! Each individual of us, consciously or unconsciously, persists in regarding the foot of earth that he happens to occupy at any given moment as the precise nucleus of the visible universe; and the fair example is not lost on mankind as a whole. Although we have ceased to believe that the earth is the center of all sidereal systems, that Orion and the Bear shape their courses with an eye single to our puny planet, however much we may recognize the fact that "we inhabit a dead ember swimming wide in the blank of space" about a second-rate star, we nevertheless persist in extending our yard-sticks about us and in measuring the importance of things by their nearness of approach. Something that concerns us nearly, that feeds or starves us, that makes life easier or harder, that annoys us or pleases us in the slightest degree, assumes greater size in our field of vision than does the birth of a new star or the death of an old. Indeed, we are utterly unable to imagine a world empty of men; we desire to read about ourselves; a painting that depicts neither man nor any of his works oppresses us with a sense of loneliness; and in a very true sense anything that we are unaware of does not exist.

These more or less philosophical observations are called forth by a report sent to the Hydrographic Office by my old acquaintance, Captain A. Ahman, he who commanded the Great Northern in the days when she flew the Hill house-flag on the Pacific. Captain Ahman's vessel, the Hollywood, while bound from the Pacific Coast to Australasia, encountered a phenomenon singular and, to one of the slightest imaginative power, terrifying as well. For an entire day, from January 5 to January 6, through 3 degrees and 40 minutes of latitude and 2 degrees and 45 minutes of longitude, the Hollywood "encountered very heavy drifts of pumice stone of a yellowish tint and very slushy. In some places it extended for several feet below the surface of the water, and when the sun shone it appeared to be shoal water with sandy bottom. Immense fields could be seen all over the ocean, but no pieces larger than a pea were seen." The phenomenon thus briefly, baldly, described, might impress one as being unusual enough to warrant a few lines on the first pages of the newspapers; but no. It had to make shift of mention in the shipping columns, where it was recorded as a bizarre occurrence, sandwiched between news items dealing with the departures of vessels; it was unimportant because no human ant had witnessed the eruption of the pumice; and it had, therefore, only an academic interest. But my imagination falters at what the newspapers might have accomplished had some emotional young woman happened to observe that fiery rain fall hissing into the bosom of a troubled sea; had she seen a pillar of fire rise and wax on the horizon, or heard a distant roar when some volcanic cone blew its summit to dust. Such a fair eye-witness, in the hands of a reporter adept in the manipulation of pentasyllabic adjectives, might have furnished copy for a score of first pages.

### Sea Magic

*There fared one day to my valley*
*Where the white gardenias grow,*
*A sun-burned man of the ships that on*
*Great waters come and go;*
*And he talked to me of the booming trades,*
*Of the Polestar and the snow.*

*Alone in the place of perfume*
*I was looking out on the sea—*
*The cloying breath of the waxen bloom*
*Bore heavily on me,*
*As I gazed back over the years and sought*
*To peer into the To Be.*

*Then came the man like the rain-wind*
*To the earth heat-vexed and dry—*
*The tang of the sea in his every word,*
*The blue of the sea in his eye;*
*And he spake of the rest of the ocean's breast*
*And the freedom of the sky.*

*I will go out from my valley*
*Where the pale gardenias blow;*
*The man of the sea has tempted me*
*And his wonders I would know,*
*And I yearn for the far horizon line*
*And the land lights' fading glow.*

—*Herbert M. Ayres.*

Captain Ahman gave the longitudes between which the pumice was sighted as 172 degrees 5 minutes east and 169 degrees 20 minutes east, and the latitudes as 19 degrees south and 22 degrees 40 minutes south. The rectangle thus blocked out lies between Fiji and New Caledonia, some 200 miles from the latter archipelago, and quite close to the Suva-Sydney great circle.

It is evident that Funnu Lei (I remain subject to correction on that spelling) has been active. That volcanic islet bestirred itself in 1915 and 1916, when steamships of the Oceanic Line encountered enormous fields of pumice and ash south of Fiji. On one voyage the Ventura ploughed through floating stone for 300 miles. The fields were not unbroken; patches alternated with open water, that is; and even then, wide as was the covered area, it was growing appreciably smaller, probably as pumice became saturated with water and sank. In one interesting particular, the Ventura's account differed from the more recent one of the Hollywood; six years ago the size of fragments of stone varied from a fraction of an inch to a foot, whereas Captain Ahman saw no bit larger than a pea.

I wish that I might persuade mariners to take a kindly interest in volcanoes. Most of the great craters of the world are within a stone's throw of the sea: Krakatao, Mauna Loa, Hekla, Stromboli, Asama, Vesuvius, Popocatapel and the long chain of the Andes. The kinship of volcano and ocean, of fire and water, might be commemorated by naming steamships after mountains. Think of the interest that might be aroused, especially among radio operators, who discovered a word like Minchinmadiva sputtering at them from the air. And, aside from the sentiment, there is another reason why mariners might bestow an encouraging pat on the shoulders of such a cone as Funnu Lei; if it could be persuaded to forsake its present wanton ways and to apply itself to the business-like manufacture of basaltic lava after the Mauna Loa plan, it might build itself into an island, which would supply cargoes of raw sugar, tinned pineapple and avocadoes. All this it might accomplish within a million years. Within a million years.

THE TIME HAS COME when we should recognize the immortality won by Dr. Rudolf Diesel (ah, immortality, how lightly we use that word! Some day I shall write an essay on The Diminishing Returns of Fame). As I was about to say, we should recognize Dr. Diesel's immortality by conferring upon his engine the Order of the Small Initial; in other words, I propose that hereafter we shall write it "diesel". That done, his place in engineering will be fixed, immutable, for there is no light in history so safe as the semi-obscurity of the small letter. The modest, lower-case initial invites no critical observation; like the bush, it escapes a storm that uproots the tall tree; it slips in demurely and unobtrusively, and so wins tribute from unsuspecting persons who would pass by the capitalized word with an unrecognizing stare, and so escapes those hawk-eyed gentlemen who, disliking the mountain-peak of the proper name, delight in supplanting it with the dead level of the common noun.

For what I propose there are precedents enough. During the last eight years the entire world has paid unwitting tribute to a man who, however prodigious his fame may be, surely remains unknown to a large number of persons. I refer to Julius Caesar. Now millions of living men and women have heard of the German Kaiser and the Russian Czar, like as not have damned both heartily, without ever giving a thought to the fact that the titles of both reflected the magnificence of "the first and the unique Imperator Caesar", whose cognomen was adopted by his long line of successors as the most fitting symbol of the imperial purple of Rome.

But there are instances nearer home. When I was younger than I am now I discovered with vast surprise that our "macadamized" roads (the day of the concrete base and asphaltic surface had not dawned) derived their name from an engineer, one John Loudon McAdam. Although the spelling has been changed somewhat, doubtless because some patriotic Englishman had tired of too much Scotch predominance in the empire, McAdam enjoys a snug fame that shall last as long as his system of making roads.

The day will come, I doubt not, when the names of certain students of electricity will be continually on the lips of men who know not Edison and Steinmetz. These names slip on modestly through the streets of speech, four among thousands, common nouns, having none of the arrogance and parade of the capital. Need I say what they are? Ohm, volt, watt, ampere. They form a singularly cosmopolitan crowd, for Ohm was a German, Volta an Italian, Watt a Scot (how the Scotch do insist on being heard!) and Ampere a Frenchman. There they are, blessed with a mild immortality that is most likely to be denied much greater men who shall follow them.

I think that I have made out a tolerable case. What say you, gentlemen of the marine journals? Shall we write it "diesel"? The ayes have it.

* * *

WHEN THE PULSE OF LIFE beats low and things generally go to the devil and I wonder whether there is any new thing under the sun for me to write about, I always manage to cheer myself wonderfully by looking over the Pacific Coast newspapers for announcements of rate-changes in the intercoastal trade. Not that I really care what the tariff says of canned kangaroo, n. o. s., w. or m., ship's option (plus a few more hieroglyphics the meaning of which no one knows); no, not that at all: my interest lies altogether in the identity of the public benefactor, the philanthropic corporation known as a steamship line, that has reduced the rate on iron life-preservers from Utica to Tombstone, Arizona. Sometimes the Luckenbach Line has made an unprecedented cut of ⅛ cent a hundred pounds; now it is the North Atlantic & Western, or the Atlantic-Gulf & Pacific; but usually it is that incorrigible Williams Company. And thereby, as Aristophanes said, hangs a tale.

Several months ago the intercoastal conference adopted a rule that no member should make public any change of rates: that act was the function of the conference alone. For this apparently innocuous bylaw there was good reason. The fact was that a rush to the newspaper offices had become the principal function of traffic managers and freight agents, each craving to be first with the statement that he desired to make public certain highly important rate-changes. At times, so the story goes, the doors to editorial offices became, as at the Slaughter of the Wooers, too narrow for the flight of those streaming hordes of publicity-seekers. The scene was, for all the world, like that of the old days of pugilism, when the fighter won whose manager got to the telegraph office first.

Well, as time passed, this exercise became too violent for the more sedate and girthful members, and they forced the adoption of a rule that the conference secretary alone should advise the press (and by that they meant the newspapers, O Best Beloved) of reductions in the rate on camel feathers and nitrate of mud and other strange and unusual commodities that steamship lines manage to discover and insert in their tariffs. For a few days all went well; in fact, conditions were so quiet that most of the newspaper office boys began to recover from being trampled underfoot many times, although some of them will limp for the remainder of their lives. For a time, as I said, all went well; then, on one snappy autumn morning, out blossomed the Williams Line with its own individual watermarked statement: "John W. Chapman, Pacific Coast manager of the Williams Line, has announced important reductions in rates on striped paint, wooden boiler-tubes, cheese-augers and other commodities, l. c. l., Schenectady to Galapagos Islands . . ."

Having a perverse sense of humor, I clipped the announcement and dispatched it to the conference secretary. A few days later I saw him. I grinned maliciously. "Well," said I, "you have repealed your rule regarding announcements of rate-changes." He scowled after the ferocious manner of conference secretaries. "The Williams Line has not heard the last of this," he uttered from the depths of his soul and chest. That he was correct is quite evident: here I am reminding Mr. Chapman of his misdeeds.

But Mr. Chapman is not alone among the goats. I note that T. B. Watson, intercoastal freight agent of the Admiral Line, which represents the North Atlantic & Western, wields a wicked typewriter up Seattle-way; and R. S. James, resident agent of the Luckenbach Line in the same territory, must carry a large stock of cigars for the journalists (and by that, O Best Beloved, he means newspapermen). Yet honors are not even: Mr. Chapman leads the field by at least "a dozen important commodity items" (and by that, O Best Beloved, he means goods and things shipped by steamers).

* * *

IN A RECENT NUMBER of Japan, the Oriental travel magazine edited by James King Steele and published by the Toyo Kisen Kaisha, appeared a charming description of a Chinese junk seen by Poultney Bigelow in the harbor of Takao, Formosa. With three genuflexions and the triple banzai to Mr. Steele, I beg his permission to quote it:

The Japanese harbor master was with me, and I learned then that he had never before been upon the deck of such a craft—deeming it, doubtless, beneath his personal notice. I asked him to present my compliments to the Chinese captain and request permission to look about. A grave and learned looking man was the skipper, sitting cross-legged under the poop deck in the space reserved for officers and high-grade passengers. There was no head room, in our sense, for no one stood up in his cabin; one entered on all fours and sat or slept on the clean mats. The forecastle was equally clean and well ventilated, a mat for each man, plenty of light and air—not a speck of dirt. The captain had on a suit of some loose, black, shiny stuff, Chinese pattern, and was gravely smoking a long pipe.

The massive rudder-head came up through his cabin and suggested wet moments in case of a heavy following sea; but a junk is a buoyant thing with plenty of rise fore and aft. The anchor was as in the times of Marco Polo and is heaved in over a wooden drum that reaches clean across the forecastle and through the bulwarks. There was a square wooden water tank at the corner of the poop where the captain could watch it. The cook had a fire going near it—a few charcoals with a pot over it—no complicated galley—rice for all hands—also tea. . .

The Chinese junk has existed from time immemorial; and she will probably flourish proudly throughout the seven seas long after the last lump of coal has been quarried or the last gallon of oil pumped from the wells of Mexico or Baku. The earliest European travelers were astounded by the magnificance and seaworthiness of Chinese ocean craft seven centuries ago; and we need to recall that nearly every advance in navigation from the first mariner's compass to the water-tight compartments of our modern steamers are of Chinese invention. These people have ever built swift and seaworthy craft and they have produced mariners of skill and courage —enduring unto this very hour. Their motive power is derived from the winds of heaven and the muscles which they apply at the oar. These are not apt to propel a junk thirty miles an hour, but the owner of that junk earns nevertheless a goodly dividend—perhaps a better one than the man who makes a speed record on coal or oil. Wind has not gone up in price and sails are cheap. To me the junk has ever been a source of delight, for it is the apotheosis of manual dexterity. One can hardly think of any injury to such a craft that could not be made good by her own crew, assisted by the tools usual on any sailing craft. We of decadent democracy have come to despise hand labor. When our machines go wrong we send far away for a missing part and meanwhile salaries go on and men remain idle. Not so in Junkland! When the wind fails the long sweeps are used as auxiliary and when the wind is fair there are always odd jobs that help to keep the crew at work and the owners contented. Those who think that the sailing craft is doomed have never seen the Far Eastern ports.

* * *

WHEN THE NATIVES of a certain archipelago in the South Seas gather on their lagoon beaches they often sing a song that runs thus:

O Kuki, O Kuki, O Kuki, to arikivaka,
Neborau e, neborau e, neborau e, ki Samoa.

This song is of a man, a sailor, who was never seen by those who sing of him, or even by their grandfathers, who never set foot on their islands, who has been dead 143 years, whose fame yet lives in many a remote corner of the Pacific no less than on the shelves of libraries and in the capitals of the world. Those who understand how Caucasian words are rendered in island tongues already have guessed the identity of the man of whom I write; to others I shall say that he is Captain James Cook, R. N.

Cook, Cook, Cook, king of canoes,
Navigated O, navigated O, navigated O, to Samoa.

On February 14, 1779, Captain Cook died at the hands of the Hawaiians of Kealakekua. Perhaps the natives had tired of feeding and feasting their white guests; perhaps the British seamen of Cook's little fleet were guilty of misdeeds such as have characterized the white man in the Pacific; perhaps indeed, as Walter Besant surmises, some native humorist wondered how a god would look with a spear thrust through his body. So Cook fell and lay both on land and in the sea, in a manner that strangely fulfilled the line of the Volsunga Saga, "betwixt the earth and the water;" and there he died. His men fled, and the Hawaiians carried off the body, with the result that no man knows to this day where the bones of the great navigator lie hid.

But someone set up a stump of cocoanut in a fissure of the rocks to mark the place where Cook had fallen, and a copper plate was placed on the log by the crew of H. M. S. Imogene in 1837. Two years later a sheet of copper was placed on the stump by the crew of the Sparrow Hawk, also of Her Britannic Majesty's Navy; and in 1859 the people of Hawaii pledged about $1000 with which to erect a monument.

Whenever a British man-of-war is in Hawaiian waters there is enacted a striking scene of respect to the dead captain's memory. Each vessel goes to Kealakekua and places the monument and ground surrounding it in good order. For many years the calls of the warships were sorely needed, for without their services the place, which must serve as the grave of Cook, would have been neglected, or worse; but of late the people of the Hawaiian hamlet have kept the grounds in excellent condition. But the duty should not rest upon individuals who serve voluntarily, nor should it devolve upon the occasional man-of-war that anchors in the bay. Out of all the millions that Congress appropriates for every conceivable purpose under the sun, a few dollars might be spared for the maintenance of the grave of one of the world's great mariners. Our British cousins, I believe, would be grateful for such a graceful and gracious act, and we ourselves would be the better for it. Even the natives of remote archipelagoes remember having heard their great-grandfathers speak of the man: "Cook, Cook, Cook, king of canoes."

THE SECOND MATE.

# PEACE IN THE PACIFIC

## Armistice Signed by Belligerents in Rate-war. Reorganization of Pacific Westbound Conference Under Way. Tariffs Still at Low Level.

AN armistice has been effected in the trans-Pacific rate-war, following a conference of San Francisco, Portland and Seattle operators in Portland, Oregon, April 11. In the remote future, hostilities may be resumed, but rate-war guns were silent at the middle of April.

In the Portland meeting a reorganization of the Pacific Westbound Conference was perfected. Rules and regulations, which had been formed a year ago, were adopted by those present and were ordered submitted to all Pacific Coast operators. Represented at the conference were: Frank Waterhouse & Company, China Mail, Furness, Withy & Company, Canadian Pacific Steamships, Robert Dollar Line, Admiral Line, Canadian Government Merchant Marine, Java-Pacific Line, Walker-Ross Company, Sudden & Christensen, Columbia-Pacific Shipping Company, A. M. Gillespie & Company, and Mitsui & Company.

For two years, trans-Pacific rate affairs have been in a chaotic condition. In March all restraining rules were abandoned, formal declarations of combat were published, and the battle was on. Indiscriminate rate-cutting characterized the battle for cargoes, culminating in acceptances of lumber shipments at $10 a thousand feet, with proportionately low private quotations on other commodities.

### The War Is Over

Open warfare is not always so open as it is popularly supposed to be, and the barrage of confidential tips, rumors and reports laid down by combatants created a smoke screen, through which the actual rate situation was to be viewed with extreme difficulty. Perhaps some of the persistent rumors of rate-slashing were inspired, but combined with the operators' knowledge of definite reductions, they aided materially in demonstrating the dangers attending independent struggle. Weary from a conflict that could never hope to offer aught but disaster, a number of trans-Pacific operators sought, in the Portland meeting, to end the war and stabilize rates. As indicated, the war is closed. Whether a working agreement will be evolved that will find general observance, remains to be seen.

Operators who have definitely decided to affiliate with the coast organization are: Furness, Withy & Company, T. K. K., O. S. K., Robert Dollar, Java-Pacific, China Mail, Canadian Government Merchant Marine, N. Y. K., Mitsui, Suzuki and Y. K. K. It will be observed that the U. S. S. B., Blue Funnel and Canadian Pacific have not formally entered the organization. However, the Shipping Board is active in promoting the conference. As in the past, it is exercising its influence on the side of peace, but is reluctant to affiliate with the organization until the Blue Funnel and Canadian Pacific have entered the fold. The Blue Funnel and Canadian Pacific may be described as spectators, who, while agreeing to abide by the rules of the conference, desire to observe its operation before handing in their memberships. If the conference functions successfully in securing a strict observance of rates, both lines will affiliate.

### Three Local Organizations

As at present outlined, the conference will cover the Pacific Coast, with local organizations maintained in Seattle, Portland and San Francisco. Local bodies will have direct supervision over local and non-competitive commodities, while the coast conference, as a whole, will establish rates on transcontinental and competitive shipments.

Trans-Pacific rate matters have been in a turmoil for two years. Many futile armistices have been arranged and both local and coast organizations have undergone innumerable minor and major operations in an effort to effect a satisfactory cure. In June, 1921, the organization split into three groups, represented by the Columbia River, Puget Sound and San Francisco. Puget Sound finally dissolved its formal organization, the functioning of the Columbia River body was disrupted by an influx of Japanese tramp tonnage, and San Francisco lost members. San Francisco, however, was able to function with some degree of success because of its greater non-competitive business. The Shipping Board of course was able to hold its members in line and throughout the long controversy was a dominant influence in seeking better conditions. Vice-President Love of the Emergency Fleet Corporation, at the same time, exerted his offices in behalf of peace, but was forced to postpone his plans when widespread slashing occurred. Tramp tonnage on the Columbia River, owned by Japanese, had no sooner dropped rates on lumber to $12 a thousand feet than the Blue Funnel met this competition with proportionate reductions. This called the hands of O. S. K., N. Y. K. and Admiral Line, who up to that time had not been engaged in the skirmish and the challenge was accepted. The final straw was added by the Canadian Pacific, which declared all rates open. Puget Sound and San Francisco then entered the expensive pastime and the fight was open to all who could afford to participate.

### The Going Rates

Until the conference is perfected, operators have generally agreed to conform to these rates: wheat and flour, $5.50; logs, $17.50; lumber (over 24 feet), $12.50; under 24 feet, $11.50; copper, lead and spelter, $5.50; salmon, $12; milk, $10. These rates are lower than those in effect before the rate-war was started, but are an improvement over rates offered by independent lines during the recent conflict. They have been adopted as fair rates, based on economical operation. Higher rates would be difficult to secure and to cut below the schedule would merely invite a repetition of hostilities, with a consequent loss to all concerned.

The obvious impediment to an early and satisfactory adjustment of the Pacific westbound situation lies in the surplus tonnage available for existing business. To fill a short cargo an operator offers concessions, which are demanded of, and met by, other operators. Insignificant infractions of conference rules are magnified and reprisals are sure.

Any organization that will assume the role of conciliator in inevitable small controversies will serve usefully; but, in a large way, really effective co-operation and protection to trans-Pacific rates will be difficult to secure until every important operator is represented formally in the conference. Like all wars, the rate-war has left its problems, but a return to reason is evident.

# PACIFIC CONFERENCE RATES

As of April 15

**The following rates, quoted by the conferences that govern different trades of the Pacific Coast of the United States and Canada, are published as a matter of information. They are accurate for the date given above; but, as frequent changes may occur, shippers in all cases should verify the quotations. All rates are in gold dollars, unless otherwise indicated. At the head of each table appears the standard used, whether 100 pounds or long or short tons. The following symbols are employed: W, weight, 2000 or 2240 pounds, depending upon the trade; M, measurement, 40 cubic feet; W/M, weight or measurement, ship's option; BM, board measure, 1000 feet. Only the important rates are quoted.**

## Intercoastal

**Eastbound:** Atlantic Intercoastal Conference.

(100 pounds)

| | | |
|---|---|---|
| Canned goods | | .50 |
| Dried fruit | | .55 |
| Lumber, open; about | BM | 13.00 |
| Flour | | .35 |
| Wool (greasy, in bags) | | 1.25 |
| Wool (greasy, compr'd bales) | | .90 |

**Westbound:** Atlantic Intercoastal Conference.

(100 pounds)

| | | |
|---|---|---|
| Steel | | .60 |
| Tinplate | | .50 |
| Hardware | | 3.50 |
| Dry goods | | 4.00 |
| Shoes | | 3.25 |
| Furniture ($20 value) | | 1.80 |
| Cotton piece goods | | 2.65 |

## Gulf

**Eastbound:** Pacific Coast-U. S. Gulf Eastbound Conference.

(100 pounds)

| | | |
|---|---|---|
| Canned goods | | .50 |
| Dried fruit | | .55 |
| Lumber | BM | 18.00 |
| Flour | | .55 |
| Wool (greasy, in bags) | | 1.25 |
| Wool (greasy, compr'd bales) | | .90 |

**Westbound:** U. S. Gulf Intercoastal Conference.

(100 pounds)

| | | |
|---|---|---|
| Soil pipe | | .50 |
| Naval stores | | .75 |
| Furniture | .75 – | 1.25 |
| Agricultural implements | | 1.25 |
| Hardware | | 1.56 |

## Cuban

**Eastbound:** Pacific Coast-Cuban Eastbound Conference.

(100 pounds)

| | | |
|---|---|---|
| Beans | | .75 |
| Canned goods | | .74 |
| Cement | | .75 |
| Flour | | .75 |
| Dried fruit | | 1.00 |
| Rice | | .75 |
| Lumber | BM | 18.00 |

**Westbound:** No cargo.

## South American, West Coast

**Southbound:** Pacific Coast-West Coast South America Conference.

(Short tons)

| | | |
|---|---|---|
| General | W/M | 20.00 |
| Lumber, prin. ports | BM 18– | 20.00 |
| Flour | W | 14.00 |
| Wheat | W | 15.00 |
| Asphalt | W | 11.00 |
| Cement | W | 10.50 |
| Canned goods | W/M | 20.00 |

**Northbound:** Pacific Coast-West Coast South America Conference.

(Long tons)

| | | |
|---|---|---|
| General | W/M | 10.00 |
| Nitrate | W | 6.00 |
| Ore | W | 5.50 |
| Cocoa beans (2000 lbs.) | W | 15.00 |
| H. W. logs | W/M | 15.00 |

## South American, East Coast

**Southbound:** Pacific Coast-East Coast South America Conference.

(Short tons)

| | | |
|---|---|---|
| General | W/M | 20.00 |
| Lime | W/M | 10.00 |
| Agricultural implem'ts | W/M | 10.00 |
| Canned goods | W/M | 14.00 |
| Cement | W | 6.50 |
| Steel | W | 10.00 |
| Lumber— | | |
| Pine, 100 M up | BM | 17.00 |
| Pine, less than 100 M | BM | 20.00 |
| Fir | BM | 15.00 |

**Northbound:** Pacific Coast-East Coast South America Conference.

(Long tons)

| | | |
|---|---|---|
| Fertilizer | W 6.50– | 8.00 |
| Coffee (bag) | | 1.00 |
| Hides | W | 12.00 |
| Wood extracts | W | 9.00 |

## Trans-Pacific

**Westbound:** Pacific Westbound Conference; U. S. S. B. Trans-Pacific Outward Conference.

(Short tons)

| | | |
|---|---|---|
| General | W/M | 16.00 |
| Steel | W | 5.00 |
| Lumber— | | |
| Ordinary | BM | 12.50 |
| Squares | BM 11.50– | 12.50 |
| Logs | BM | 17.50 |
| Flour-wheat | W | 5.00 |
| Oils | W/M | 5.00 |
| Salmon | W/M | 12.00 |
| Milk | W | 10.00 |
| Copper-lead-spelter | W | 5.50 |
| Asphalt | W/M | 5.00 |
| Rice | W | 5.50 |
| Malt | W | 15.00 |
| Sugar | W | 12.00 |

**Eastbound:** U. S. S. B. Trans-Pacific Conference, Homeward Committee. (Short tons)

| | | |
|---|---|---|
| General— | | |
| China | W/M | 17.50 |
| Japan | W/M | 10.00 |
| Manila | W/M | 12.50 |
| Rattan furniture— | | |
| Shanghai | M | 6.00 |
| Hongkong | M | 3.00 |
| Hides, dry— | | |
| Shanghai | M | 12.50 |
| Hongkong | M | 12.50 |
| Japan | M | 10.00 |
| Hides, green, Hongkong | M | 17.50 |
| Wool, Japan | M | 10.00 |
| Seeds | W | 9.00 |
| Hemp (bale) | | 1.00 |
| Vegetable oils— | | |
| Barrels, drums, under deck | | 2.50 |
| Barrels, drums, on deck | | 1.50 |
| Bulk | W | 7.00 |
| Gunnies | M | 8.00 |

## Australasia

**Southbound:** Pacific Coast-Australasian Tariff Bureau.

(Short tons)

| | | |
|---|---|---|
| General | W/M | 20.00 |
| Machinery | W/M | 15.00 |
| Lumber | BM | 14.00 |
| Lubricating oil | W/M | 7.00 |
| Case oil (case) | | .35 |
| Canned goods | W/M | 15.00 |
| Steel | W | 11.00 |

**Northbound:** Pacific Coast-Australasian Tariff Bureau.

(Long tons)

| | | |
|---|---|---|
| General | | 105/ |
| Coal | W | 5.00 |
| Wool, greasy | | £1–3/8 |
| Sheep skins | | £1–1/4 |
| Sausage casings | | 160/– |

## European

**Eastbound:** Informal Conference.

(Long tons)

| | | |
|---|---|---|
| General | W/M | 20.00 |
| Canned goods, 100 lbs. | | .65 |
| Barley-wheat | 37/6– | 42/6 |
| Lumber | BM | 90/– |
| Dried fruit— | | |
| Strapped, 100 lbs. | | .80 |
| Bags, 100 lbs. | | .70 |
| Beans-peas, 100 lbs. | | .90 |
| Rice, 100 lbs. | | .60 |

**Westbound:** Rates fixed in Liverpool; fluctuating.

# THE CHARTER MARKETS

## Page Freight Report

San Francisco, April 18, 1922.

At the date of our last report, March 23, there was every indication that the demand for grain space for the United Kingdom and usual Continental range ports would continue at the rates then obtaining, namely, 42/6, with some prospect of their strengthening, both on wheat from the North and on barley from San Francisco, but almost overnight the situation changed and the demand practically died away, with a consequent decline in rates, so that the limited amount of space called for at present is being booked as low as 30/- for late May and June shipment. Several full cargo fixtures are reported of Japanese steamers for grain from the North for United Kingdom, done through London, but no particulars are mentioned as yet.

In lumber, business has continued quiet, although the Robert Dollar Company has taken the steamers Somedono Maru, Kureha Maru and Hakushika Maru, all for Japan, and will load for its own account its two sailing ships, Janet Dollar and Joseph Dollar, for the same destination. The rates on these fixtures are not reported. For Callao the schooner Fearless has been taken for lumber from Puget Sound by the Mohns Commercial Company on private terms.

In nitrate, the only fixture reported is the schooner Vancouver, to load from Chile to Honolulu at a rate of $5 a ton for account of W. R. Grace & Company.

The Bank Line Transport & Trading Company reported the fixture of the steamer Gymeric to load gasoline from Oleum to United Kingdom, private terms.

Chartering in all directions concerning the Pacific Coast is very quiet indeed.

PAGE BROTHERS, Brokers.

## Beyfuss Freight Report

San Francisco, April 18, 1922.

Since our report, dated the 23rd of last month, there has been a dearth of chartering in all directions. In fact, practically speaking, there is no full cargo business.

Grain to Europe: Very little has been done in this trade during the past month and barley has been booked at about 35/-, whereas wheat has been reported at as low as 30/-, although in neither commodity has there been any large amount of space taken except one parcel of wheat.

Lumber to the Orient has shown little change from our last report except that the conference has fixed rates during the past week at $12.50 for large squares and $11.50 for baby squares, but during the month several good sized parcels have been fixed at $9 and $10, but there is no activity.

One steamer is reported at about $12.50 for full cargo of lumber to the Atlantic, but even this trade is like the others, with occasional inquiries but very little actual business resulting.

There have been some lumber parcels booked to West Coast of South America and rates in this trade are about $18 for steamer shipment and about $17 for sailer shipment, whereas in the Australian lumber trade no transactions are reported and rates per regular liners are nominally $15.

C. BEYFUSS CO., Brokers.

## Japanese Charters

During the third week in March chartering in Kobe manifested a tendency to become steadier, due to employment of small craft in the Kamchatkan and Hokkaido trades. A slump in wheat and lumber shipments from the United States, wheat from Australia and rice and sugar from Java and Saigon made for dullness in chartering larger steamers, with the result that a vessel of 5800 deadweight tons went begging at yen 2. Current charters a deadweight ton were as follows:

| | |
|---|---|
| 9000-ton | yen 1.80 |
| 6000-ton | yen 2.00 |
| 5000-ton | yen 2.10 |
| 3000-ton | yen 3.00 |
| 2000-ton | yen 3.50 |
| 1000-ton | yen 4.00 |
| 800-ton | yen 5.00 |

Comparative rates are given as follows:

| | End Jan. | Middle Feb. | End Feb. |
|---|---|---|---|
| Near Sea services | yen 3.00 | yen 3.50 | yen 3.50 |
| Ordinary ocean services | yen 2.50 | yen 2.50 | yen 2.50 |
| North American services | yen 2.50 | yen 2.50 | yen 2.50 |
| Round the world services | yen 3.00 | yen 3.00 | yen 3.00 |

The Kobe Shipping Exchange reports the following as having been ruling rates on shipments from Singapore to Europe:

| | Rubber per long ton | Lead per long ton | General Mdse. per long ton |
|---|---|---|---|
| December 15, 1915 | 138/6 | 80/- | 120/- |
| January 9, 1918 | 276/- | 150/- | 240/- |
| February 1, 1918 | 237/6 | 150/- | 220/- |
| February 1, 1919 | 165/- | 100/- | 145/- |
| May 1, 1919 | 137/6 | 160/- | 120/- |
| November 25, 1920 | 165/- | 100/- | 145/- |
| February 28, 1921 | 100/- | 75/- | 110/- |
| April 19, 1921 | 65/- | 97/- | 65/6 |
| November 16, 1921 | 60/- | 60/- | 85/- |
| February 17, 1922 | 50/- | 60/- | 85/- |

## Shipping Notes

The Pacific Coast-Atlantic Eastbound Conference, which has fixed eastbound intercoastal rates, has ceased to function. Eastbound rates as well as westbound will be fixed by the New York conference, on which most of the principals of the different steamship companies are represented.

* * *

Williams, Dimond & Company, San Francisco, have taken over the agency of the Mexican States Steamship Line, heretofore represented by Coppel Brothers.

* * *

An agreement has been reached by rail and water lines of Los Angeles to absorb wharfage charges, so that that port might be placed on a basis of equality with other Pacific Coast ports.

* * *

The Japanese government has asked the Diet for an appropriation of yen 900,000 for a mail subsidy for an Ichow-Chungkiang service on the Yangtse. For what period the appropriation is asked does not appear. If a subsidy is granted it probably will go to the Nisshin Kisen Kaisha.

* * *

The British India Steam Navigation Company has awarded a contract to the Mitsubishi interests for 100,000 tons of coal to be delivered during 1922 at yen 12 a ton. The Mitsui interests bid yen 12.50 and Asano yen 13.50. Purchases of coal are being made in Japan because of high prices ruling in Calcutta.

# MARINE INSURANCE

CHARLES F. HOWELL, Eastern Contributing Editor
"FRANCIS ADRION," Western Contributing Editor

## On the Atlantic

### Rating S. B. Vessels

Classifying Shipping Board vessels for rating purposes is one of the most important undertakings now before the marine underwriters of the East. It involves many delicate problems and draws generously upon the most cordial spirit of cooperation that both sides can muster. But it will have to be accomplished if the best interests of either are to be served. Developments have carried the tentative program to the point where a large committee of cargo underwriters has been in consultation with a small committee representing the Emergency Fleet Corporation, and proposals have been exchanged by the terms of which the underwriters are to give the U. S. S. B. boats, wherever possible, a parity of rating with privately-owned vessels of similar tonnage of a competing class, and the board is to see that such minor structural disabilities as have militated against an improvement of its classifications shall be remedied. The underwriters have selected as their conferees C. R. Page, Hendon Chubb and William H. McGee; their large general committee is to be subdivided into smaller working committees.

First-class liner ratings have been granted to the board's vessels in the best American companies, among which are included the United States Lines, the Munson Line, the Admiral Line, and the Pacific Mail, as also former German liners in the Atlantic passenger service. Inclusion also is made of the new type of 535 and 522-footers that carry both passengers and cargo. Many underwriters have been giving the better grade of Shipping Board vessels first-class liner ratings for some while, but these recommendations will make the custom general. The next step will be to solve the rating problems of U. S. S. B. vessels next in importance to those above enumerated; and then to go after the freighters. Differentials do not work out so very badly against the latter on long voyages. It has been estimated that the saving in insurance cost by the concession of first-class liner ratings will run from 5 to 25 cents on every $100 insured.

The matter to be dealt with falls into two divisions: the lines whose merits are known to the underwriters; and those that are tonnaged by cargo boats and are under the management, in many instances, of more or less unknown and inexperienced firms. It will take considerable time to investigate and pass upon the merits of the latter class. The following elements would have to be examined into in either case: 1. The character of privately-owned tonnage and the management engaged in each of the competitive lines, and the classifications now generally accorded to each of such lines throughout the market. 2. The general character and record of the management of board's competing line. 3. The character and record of the Shipping Board tonnage allotted to the line. Upon this data a class would eventually be assigned.

The board, on its part, would be expected to observe such conditions as the following: no substitution of tonnage; no overloading; to load under survey; to comply with the requirements of the surveyors of the Salvage Association; to make such minor changes, within a reasonable time, not to involve heavy expenditures, in the ships' structure and equipment as may be necessary to enable them to safely carry dry and perishable cargoes and to navigate with equal safety to privately-owned competitors; equal obligations with commercial carriers; avoidance of the constant shifting of personnel, particularly of chief engineers; and adequate investigations of disasters and cargo damages in order to establish and maintain strict standards of responsibility.

### Safeguarding the Leviathan

Every care was taken to insure the safety of the great Leviathan on her run from New York to the repair yards at Newport News, where a matter of $6,000,000 is to be expended upon her reconditioning for the Atlantic passenger trade. She was insured for $2,200,000 in the New York market, and for a like amount in London. In addition about $2,500,000 of insurance has been placed on her through the American Marine Insurance Syndicates as regards betterments at the yards, and more than $4,000,000 more in London on a builder's risk policy. The crew that took her down numbered 676, and had been thoroughly drilled in what might be required of them before the vessel left New York. This crew consisted of a deck department of 142 men, an engineering department of 446, and 88 stewards. Of the deck crew, 57 served as guards and watchmen. A complete fire-alarm system was installed, worked by electricity, and arrangements were made for fifty fire hose, of 2½ inches each, to be used simultaneously if necessary. She was commanded by Captain Bernard of the Army Transport Service, who had been in command of her every time she entered or left New York since coming under the American flag. Her pilot and tug commanders were those who had always handled her. Under Chief Engineer Alexander, who knows her machinery and auxiliaries thoroughly, there were thirty-five licensed engineers. Forty-five boilers of the Yarrow modified type furnished the steam at 190. Thirty-eight hundred tons of coal were taken on board, as also an unlimited supply of fresh water.

When she left New York the Leviathan's draft was 38 feet aft. At Hampton Roads she was moored to a permanent mooring where she was trimmed to a draft of 34 feet 6 inches, even keel. The slip where she is to be reconditioned at Newport News has been dredged to a depth of 39 feet.

### North British Enters Marine

The fling at ocean marine insurance taken by the Aetna in its recent withdrawal from that line has been more than neutralized by the entrance of the strong group composed of the North British and Mercantile, Commonwealth, Pennsylvania and Mercantile of America. Enormous resources are represented by these four stalwart institutions, and their entrance into the ocean marine business will have the effect of stimulating faith in the immediate future of this branch of underwriting. It is the opinion of the North British management that the ocean marine business cannot very well become worse than it is at present, and that by entering now it will have the advantage of rising with the expected tide. An excellent

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PORTLAND, ORE.

FRANK G. TAYLOR, MANAGER, PACIFIC NORTHWEST BRANCH

choice of manager was made in the selection of Albert Ullmann, who is in excellent standing in the New York market, having had an experience of close to thirty years in important posts with the leading offices and companies of the East. He will make his headquarters at 48 Beaver street, and began writing for his companies early in April.

## Ferguson Made Marine Manager

The important post of marine manager for the American Foreign Insurance Association (an organization formed a year or two ago to put American insurance companies in touch with trade relations all over the world) has fallen to John Ferguson, until recently underwriter of the Union Marine of Liverpool. With the announcement of this selection came the news that it had actually been consummated early in January, at which time Mr. Ferguson resigned from his Liverpool connection and traveled throughout England and Scandinavia in the interest of the A. F. I. A. In the course of these "sounding-out" explorations he found a very general sympathy with the world movement of the association, and he enters upon his new and highly important duties with complete confidence in their successful outcome. Mr. Ferguson is regarded as an excellent choice. He has had many years of experience with the Liverpool, Manchester and New York markets, and always in positions of great responsibility. Among other qualifications he has that of having been the chief supervisor of more than 250 agencies scattered all over the world.

## Lloyd's Legislation Goes Over

It was decided at the last moment by the New York insurance superintendent not to present any bills to the present legislature on the subject of competitive conditions with unauthorized foreign insurers. London Lloyd's' of course, was the chief offender in mind. There was too little time for an adequate consideration of any such bill by the legislature, and so action at this time was abandoned. In an official statement on the subject, issued by Insurance Superintendent Francis R. Stoddard, Jr., it was admitted that the department has held that the placing of insurance with unauthorized insurers, mainly London Lloyd's, by agents and brokers in the state of New York is illegal. In the judgment of many eminent lawyers marine insurance was not meant to be embraced in the prohibition.

To present the Lloyd's side of the case that body sent Sir Raymond Beck, a former chairman of the organization, to New York. He was given every opportunity to see and convince the authorities, and frequently expressed the alleged desire of Lloyd's to conform to our laws if allowed to do business here. He likes to insist that Lloyd's are pioneers, doing a great public service; and he says he is sure a way will be found for them to co-operate with American insurers to the mutual advantage of both. The proposed marine bill, withdrawn at the last moment, met with his most cordial approbation.

## American Bureau Changes

On April 8 the American Bureau of Shipping took possession of its new offices on the twentieth floor of 50 Broad street, New York. More space and better working conditions are had there, and the location is more central. Joseph J. Tynan, general manager of the Union Plant, Bethlehem Shipbuilding Corporation, of San Francisco, has been made a member of the board of managers, and E. B. Hill, vice-president of the Bethlehem Shipbuilding Corporation, has been elected a member of the bureau to succeed H. S. Snyder, resigned. G. P. Taylor has been made a vice-president, succeeding the late Commodore Bertholff, combining that office with his position as treasurer. William Francis Gibbs and Theodore Wells have been added to the technical committee on naval architecture. A new sub-committee on internal combustion engines has been added to the engineering committee; it will consist of Dr. C. E. Lucke and Messrs. Rutter, Cooke and West.

## Bill of Lading Compromise

A through bill of lading went into effect on March 15, that is, in turn, to be superseded by an amended version on July 15. The former measure was put forward by the Interstate Commerce Commission, and considerable friction developed between that body and the Shipping Board on account of it. A get-together meeting was engineered by mutual friends at which the differences between the organizations were reconciled on the following compromise basis: the new bill of lading to go into effect March 15 in the form promulgated by the Interstate Commerce Commission, but on July 15 an amended bill is to replace it, the chief changes in which are to be: (1) a raising of the limit of liability to the package from $100 to $250; (2) thirty days' time in which to file a claim after the goods have left the pier; and (3) nine months in which to commence suit. It was decided to allow the first bill to have four months of life because of the expense and inconvenience that would otherwise be caused the transportation companies that had laid in a supply of the printed bill and had announced its employment as of March 15.

## Increased Use of Sailers

It is frequently noted that an unusually large number of sailing vessels have been operating of late in the Atlantic Coast and West India trade. At first blush it might appear odd that this should be the case, in view of the large amount of steamer tonnage now available. The reason lies in the cheapness of sail as compared with steam and in low

INSURANCE COMPANY
Freights and Disbursements
STREETS, SAN FRANCISCO, CALIFORNIA
W. H. WOODRUFF, Manager, Southern California Marine Branch
230 BYRNE BUILDING
LOS ANGELES
CHARLES R. PAGE, Manager
ATLANTIC MARINE DEPARTMENT
72 BEAVER STREET NEW YORK
309 COLMAN BUILDING, SEATTLE, WASHINGTON

freights. When freight rates go down, sails always come out. Long voyages are being taken, too; cargoes of wool are going by sailers from Australia to London. But underwriters, as a rule, do not like sailers; and they are now engaged in carefully watching out that their policies are so drawn as to exclude certain risks of this kind.

## Delayed Deliveries

Now that the Cuban authorities are bestirring themselves to get some kind of order out of the chaos that has grown up in connection with the holding of American shipments in storehouses in Havana and neighboring points, the question is once more being asked: What is the liability of the underwriter for damage or loss that may have developed during the period intervening since the goods were shipped? It is unlikely that the underwriters are going to assume liability at this late date for losses due to the refusal of Cuban consignees to accept delivery. Under the warehouse-to-warehouse clause the insurance ceased the moment the merchandise was warehoused, and in some cases it terminated even prior to that time through the repudiation of the contract with the American shipper by the consignee. Both the American and Cuban governments have signified their willingness to permit the goods to be returned without payment of dues to either of them. Everybody concedes that the pilferage in these shipments has been enormous; and now it is feared that the pilferage plus the storage charges will eat up practically the entire value of the shipments, which are estimated to have had a wartime value of $80,000,000.

## The Teredo Hazard

Underwriters who write wooden vessels have suffered so much from losses and damages sustained as the consequence of the activity of the teredo, the wood-boring worm which infests tropical waters, that they were by no means surprised to learn that an appropriation of $2,450,000 has been asked to combat the destructiveness of this influence at the Mare Island Navy Yard. It is the opinion of many underwriters that they have paid total losses in wooden tonnage because of the weakening of timbers by the teredo.

## Preparing for Lake Business

Navigation on the Great Lakes opened officially April 15, although there had been an occasional sailing prior to that date. Ice conditions at the upper ports have been unusually favorable and both skippers and underwriters were willing to take a chance. The prospect is for a better year than that of 1921-1922. It is anticipated that the coal strike will be felt in a reduction of the output of the mines at the lower ports and that, in consequence, freighters going south with ore will return comparatively light. It is the return carriage of coal that helps balance the books. The ore output undoubtedly will be heavy. Great quantities of it have been piled for transportation at the upper end of the Lakes, and much of this will be carried down as fast as possible to meet the demand developed by activity in building lines, steel construction and restorations in railroad equipment and rails. Underwriters anticipate little change in rates and valuations.

## South American Fruit Cover

It was a novelty for marine underwriters to receive frequent declarations under open policies, during the last few weeks, of the shipment of fruit and vegetables from the West Coast of South America. This is a very unusual character of risk from that section. Inquiry elicited the information that experimental shipments were being made looking to the establishment of a regular trade in fruit and green vegetables from Chile and Peru.

## Far Eastern Problems

There has been considerable concern expressed by underwriters over the effects of the political unrest in India, and consideration has been given to the question of limiting the coverage on export shipments to fifteen days after discharge from the steamer. Considerable congestion has been reported at Calcutta, and insurance men have no desire to see a repetition of their disastrous experience at Cuban and Mexican ports. Strike risks on shipments to and from India are being quoted in the market at ¼ of 1 per cent.

## Cotton Damage Claims

Heavy claims for country damage are reported on cotton shipments to Bremen. In pre-war times Bremen had an enviable reputation for the handling of country damage adjustments, and underwriters were quite willing to have settlements made on an allowance basis rather than requiring that the damaged cotton be picked. But this arrangement has not been working out so acceptably since the war, and it is possible that the underwriters will insist upon a change in the former method of adjustment. Country damage insurance is a type of coverage somewhat foreign to marine insurance, in that it means that the underwriter pays for damage that occurs to the cotton while in its various stages of preparation for marketing and transportation to the market. The damage that occurs during this period is primarily due to poor packing and careless handling. Losses from such sources are supposed to be outside the province of a marine insurance policy, but competition and the demands of the trade have made necessary the inclusion of this coverage by marine underwriters. In order to encourage greater care in packing on the part of cotton exporters, underwriters make a premium return at the end of each season in event of the amount of country damage claims not exceeding ¼ per cent on the total value of the cotton exported; the amount of the return is the difference between this ¼ per cent and the aggregate of the claims paid. While the underwriters are liable only for the damage that attaches itself to the bales while the cotton is in the United States, yet the very nature of the cotton fiber causes this damage to eat itself into the bale, thus greatly increasing the amount of the loss by the time the cotton has reached its destination.

C. F. H.

# Pacific Developments

## New Companies Enter Field

Following closely the Aetna Insurance Company's withdrawal from marine circles comes the announcement that the North British & Mercantile and allied companies, consisting of the Pennsylvania Fire Insurance Company, the Commonwealth Insurance Company of New York, and the Mercantile Insurance Company of America, have been entered for ocean marine business in New York. Albert Ullmann has been appointed marine underwriter for the group. Mr. Ullmann, who is widely known and respected by the marine world, has an enviable record extending over a period of nearly thirty years.

Apparently the comparatively bad showing made by marine companies generally last year and the rather poor outlook ahead have not proved a bugbear to this old-line organization. It would appear offhand that the depleted marine insurance market, caused by the large number of companies who have ceased writing, has been more than offset by the great shrinkage in values and idle tonnage. However, it is inconceivable that this powerful group would take this step until it was thoroughly conversant with present conditions and future possibilities. It is more than probable that these operations will be extended to the Pacific Coast in the near future and one will, of course, suspect the next marine man who buys a ticket for New York of having designs.

## Surveyor's Services Recognized

Captain Cecil W. Brown, surveyor to the Board of Marine Underwriters of San Francisco, was recently made the recipient of a gratuity in the form of a check in recognition of meritorious service rendered in connection with the salving of the steamer Thomas Crowley. This vessel went aground near Point Concepcion on November 2, 1921. The gift was made by the interested underwriters who contributed according to their interest in the vessel.

## Shipping Board Steamers

Again referring to the matter of insurance rates on cargo in government bottoms: I now hear that the committee previously mentioned, composed of a representative group of New York underwriters, has agreed to give trans-Atlantic passenger ships operated by the Shipping Board and the new combined cargo and passenger ships in the Pacific Coast and South American service, commonly known as the 535-foot and 522-foot class, first-class liner rating. Insofar as the Pacific Coast is concerned this will cause little or no change in rates. For some time past Pacific underwriters, generally speaking, have included these vessels in their regular liner ratings. Mr Love's set-to with the Eastern market will, however, broadcast the glad news and cannot but react favorably to the operators of Shipping Board steamers on the Pacific Coast, in that it removes any handicap, real or fancied, as regards insurance in meeting competition.

## Regarding Deck Cargoes

The proposal of foreign maritime powers for the limitation or total prohibition of deck cargoes, and the establishment of an international load line, is of the greatest importance to American shipping, says a statement issued by the International Labor Office.

According to dispatches received from Geneva, Switzerland, by Ernest Greenwood, American correspondent of the International Labor Office, representatives of foreign governments, shipowners and seamen on the joint maritime commission of the International Labor Organization, are in unanimous agreement as to the need of international action in the matter. Whether this action will take the form of regulations based on the present British rules, as desired by the seamen, or whether modified regulations will be adopted, as the shipowners prefer, remains to be settled. It is said that a radical divergence of opinion also exists among the delegates as to whether regulations should authorize specific rules restricting the height and weight of deck cargoes, or whether they should permit the certification of vessels as fit for the carriage of deck cargoes, according to type, and with or without a special load line.

It is contended by the seamen's organizations that many lives have been lost and many men injured at sea each year by the carriage of deck cargoes. It is the hope of the seamen to have the British regulations used as a basis in the adoption of international regulations. On the other hand the opinion seems to prevail among shipowners and shippers that the British regulations are too stringent and that elasticity might usefully be introduced into the regulations. The shippers point out certain anomalies arising out of the strict application of the British rules, and mention two specific cases, one the case of a turret-deck ship that could only be safely sent to sea with a deck cargo; the second case that of a ship being penalized at Hamburg for being insufficiently loaded, owing to her having rejected a deck cargo in America, because of the penalties she would incur in Great Britain for overloading.

This is the first time the question has been discussed by both shipowners and seamen. It has long been a matter for discussion among shipowners, conferences having been held at Paris in May, 1921, at Madrid in October, 1913, and at The Hague in August, 1921. The seamen themselves have gone into the matter at meetings at Washington and Antwerp.

The present joint conference is made possible by the establishment of the joint maritime commission by the International Labor Organization, an autonomous association of fifty-four nations established under the Peace Treaty of Versailles. The present negotiations involve Belgium, Japan, Great Britain, Sweden, Canada, France, Italy, Norway and Germany, these countries being represented on this commission.

## What Does C. I. F. Mean?

What insurance the seller must procure, pay for and assign to the buyer, was the subject of inquiry by us recently, says a statement issued by Geo. E. Billings Company, San Francisco. One reply was: "No exporter should make a c. i. f. contract unless he has a definite understanding with his buyer as to the insurance policy he is supposed to supply."

This is amply confirmed by the difference disclosed by fifteen definite opinions received from other exporters; they were as follows:

**The Seller Must Insure**

| Trade | Replies | To ship's tackles | Until landed | Until in yard |
|---|---|---|---|---|
| Japan | 14 | 8 | 5 | 1 |
| Australia-New Zealand | 12 | 4 | 6 | 2 |
| West Coast S. A. | 12 | 5 | 4 | 3 |
| Mexico W. C. | 12 | 4 | 5 | 3 |
| U. S. Atlantic | 12 | 4 | 5 | 3 |
| United Kingdom | 13 | 5 | 5 | 3 |

It would seem from the replies that the "i" in c. i. f. has not a uniform meaning (neither in the lumber trade generally, nor in the lumber trade to particular ports), different exporters having different practices, which may, or may not, be understood by the buyers. Further, some replies admit that they commonly furnish more than they are obligated to pay for, because "the cost is small"(?). The companies' premiums must, of course, repay to them all losses (whether "extras" or not); so the basis rates must include a charge for "extras," if no specific additional is charged therefor.

We recommend this situation to your attention, so that you can properly instruct your insurance broker and enable him to get you the closest rate compatible with adequate protection.

## Coffee Records Broken

Coffee receipts in San Francisco for the ninety-day period ending March 31, 1922, broke all previous records. During this period 355,857 bags were received against 226,325 bags during the first three months of 1921. Underwriters on this commodity have expressed themselves as being well satisfied with the general outturn of cargoes thus far received. This is particularly true as regards Central American coffee. The newly inaugurated service of the Holland-America Line, combined with the other reliable steel tonnage already engaged in this service, places at the disposal of the shipper a continuous service of first-class carriers.

In the figures mentioned above there is included a considerable amount of Colombian coffee, the outturn of which was not so pleasing. This item is at all times a very uncertain quantity and has resulted in some very bad losses.

## Who Pays?

The writer viewed with interest the handling of some 14,000 bags of Central American coffee following discharge from a steamer at San Francisco. Owing to the congested

### MARINE INSURANCE BUSINESS TRANSACTED BY COMPANIES IN STATE OF WASHINGTON DURING 1921

| Name of Company | Net Premiums Written | Losses Paid |
|---|---|---|
| Aetna | $ 20,121.88 | $ 11,626.13 |
| Agricultural | 9,094.38 | ............ |
| Alliance, Philadelphia | 13,994.02 | 4,293.39 |
| American Alliance | 64.69 | ............ |
| American Eagle Fire | 188.79 | 22.77 |
| American Insurance | 917.00 | 89.75 |
| Automobile | 18,644.18 | 2,759.20 |
| Boston | 838.95 | ............ |
| British & Foreign | 24,811.04 | 10,007.74 |
| Camden Fire | 968.77 | 20.32 |
| Canton | 18,131.88 | 9,353.10 |
| Commercial Union | 2,520.97 | ............ |
| Concordia Fire | 5.68 | 664.43 |
| Continental | 1,381.18 | 196.97 |
| Eagle, Star & British Dominions | 12,301.40 | 7,875.18 |
| Equitable Fire & Marine | 287.50 | ............ |
| Federal | 15,292.42 | 19,253.47 |
| Fidelity-Phenix | 1,722.34 | 252.66 |
| Fire Association | 1,884.98 | 623.53 |
| Fireman's Fund | 166,234.73 | 81,571.84 |
| Firemen's | 873.14 | 52.52 |
| Franklin Fire | 18,111.26 | 31,458.69 |
| Glens Falls | 1,064.99 | 107.71 |
| Globe & Rutgers | 19,178.59 | 6,897.13 |
| Great American | 19,336.34 | 11,759.95 |
| Hanover Fire | 474.53 | 47.87 |
| Hartford Fire | 5,486.86 | 6,732.37 |
| Home Fire & Marine | 14,427.29 | 14,221.48 |
| Home | 8,453.03 | 17,960.18 |
| Importers & Exporters | 5,849.28 | 2,639.42 |
| Indemnity Mutual Marine | 669.70 | ............ |
| Insurance Company of North America | 152,049.73 | 77,518.00 |
| La Fonciere Marine | 766.10 | 2,000.00 |
| Liverpool & London & Globe | 10,251.45 | 11,545.95 |
| London Assurance | 246.51 | ............ |
| Marine | 1,304.89 | ............ |
| Massachusetts Fire & Marine | ............ | 323.90 |
| Milwaukee Mechanics | 726.49 | ............ |
| National Union Fire | 17,133.40 | 6,020.36 |
| Newark Fire | 1,286.92 | 19.46 |
| New Jersey | 718.49 | ............ |
| Niagara Fire | 4,074.66 | 74.69 |
| North China | 16,136.86 | 2,595.16 |
| Phoenix Assurance, London | 690.38 | 357.51 |
| Phoenix Insurance, Hartford | 11,322.71 | 15,601.45 |
| Providence Washington | 16,418.04 | 6,404.56 |
| Queen | 52.17 | ............ |
| Queensland | 12,436.89 | 9,395.78 |
| Royal Exchange | 2,305.15 | 525.63 |
| Royal | 1,889.05 | 1,427.70 |
| Scandinavian American | 18,514.61 | 10,171.19 |
| Sea | 18,788.68 | 32,603.65 |
| Security | –1,273.22 | 52.54 |
| Springfield Fire & Marine | 277.44 | ............ |
| Standard Marine | 45,128.93 | 22,714.44 |
| St. Paul Fire & Marine | 10,758.85 | 25,232.14 |
| Switzerland General | 15,461.42 | 4,107.70 |
| Thames & Mersey | 19,280.87 | 27,076.86 |
| Tokio Marine & Fire | 1,538.93 | ............ |
| Union Marine | 291.65 | 196.89 |
| United States Fire | 5,401.24 | ............ |
| United States Lloyd's | 1,674.33 | 2,600.05 |
| Vulcan Fire | 6,256.93 | 3,054.01 |
| Westchester Fire | 2,033.18 | 4,232.21 |
| Western Assurance | 12,371.53 | 14,637.96 |
| Yangtsze | 54,478.17 | 83,902.32 |
| Totals | $864,125.22 | $604,879.91 |

condition of this particular dock, the coffee in question was rough piled. Good coffee, damaged coffee, your coffee and my coffee was put in a confused jumble some thirty bags high. Stevedores were busily engaged in the arduous work of segregating this cargo according to mark and sub-mark.

One of them, on top of the pile, would seize a sack and allow it to crash to the ground. If the bag survived this shock, as it did not by any means always do, two husky workers, each armed with a cargo hook, pounced upon it and a few more pounds of spilled coffee resulted. One elderly workman, evidently grown old in this particular service, was busily engaged in sweeping up the loose coffee. It was very annoying underfoot, particularly to the owner of the coffee if he happened to be about.

Someone is surely paying through the nose for this waste. Whether it finally falls to the lot of the consignee on account of disallowed claims for short delivery or whether the burden falls on the carrier is for our purpose immaterial. It is apparent that somebody must foot the bill, and I only wish to emphasize the utter futility of adding this unnecessary loss to the ordinary unavoidable loss caused by handling.

I venture to state that a little extra care exercised here would well repay the carrier. The waste spoken of above is really so needless and the remedy therefore so simple that one hesitates to speak of it. The use of a slide corrects one fault and surely the use of cargo hooks on this class of cargo is never justified.

## Wolsum in Trouble

In what is apparently a new departure in steamer sailings, the Dutch steamer Wolsum sailed from Grays Harbor March 16, laden with a full cargo of lumber bound for Port Natal, South Africa. The cargo was shipped by Hind Rolph & Company, and insurance was placed in the San Francisco local market.

Like other pioneers the Wolsum seems to be having her share of difficulties. On April 4 she was in collision with the Shipping Board steamer West Himrod off Cristobal, Canal Zone. On April 12 it was reported that she had struck the breakwater at Cristobal, and that she was leaking in the forepeak. Report stated that it would be necessary to discharge part of the vessel's cargo to make repairs, and that she probably would be delayed about thirty days.

The West Himrod was bound from Cuba to Vancouver, B. C., with a cargo of sugar, and evidently suffered no serious damage in the collision.

## Pilferage

The pilferage evil is beginning to receive the attention it deserves. All parties concerned are now alive to the necessity of taking drastic steps to curb this practice. A more stringent prosecution of offenders, special watchmen on unloading steamers, and the co-operation of shippers who are asked to pack their goods properly and not to mark them so as to reveal the nature of the contents, are some of the means being used to this end. It is argued by some that the liability of the carrier as per bill of lading terms is not sufficient to induce them to exercise the proper amount of care in this respect.

## Insurance Brevities

On April 6 the Williams Line steamer Willpolo dropped her propeller when about 700 miles north of Balboa. She was bound west and cleared from Balboa April 2. The Panama Canal tug Tavernila was dispatched to her assistance, as was the tug Sea Lion from San Francisco. Vessel was taken in tow April 15 by tug Tavernila for San Pedro.

The suit brought against the California & Mexico Steamship Company by Julius Conrad and others has been decided in favor of the defendant. A cargo of bananas shipped from Salina Cruz for San Pedro on board the motorship Mazatlan spoiled shortly after the vessel sailed and were thrown overboard. Action was brought against the carrier for the value of the cargo. United States District Judge Bledsoe in rendering his decision held that the cargo was unfit for the contemplated voyage when shipped.

F. A.

# ABOUT MARINE FOLK

## Deaths

**Charles Harrison Higbee,** formerly vice-president of the Pacific Coast Steamship Company, in Berkeley, California, March 23.

**Captain Charles H. Alden,** for twenty-eight years identified with steam boating on the Willamette and Columbia rivers, in Portland, Oregon, March 28.

**Captain H. C. Thomas,** commander of the Admiral Line trans-Pacific liner Wenatchee, on board his ship in Manila harbor, March 4. Captain Thomas was senior master of the Admiral fleet and for twenty years was master of steamships operating in the Pacific trade.

**H. F. Flint,** chief engineer of the Admiral Line steamer Pomona, at sea, 700 miles from Yokohama, on April 6.

**Captain John Jacobson,** an old-time master and Alaska pilot, in Port Townsend, Washington, April 14.

**Wallace F. Duthie,** president of the Wallace Equipment Company and son of J. F. Duthie, founder of J. F. Duthie & Son, Seattle shipbuilders, in Del Mar, California, April 9.

## Personals

**Captain Louis B. Turner,** who has retired as marine surveyor of the Fireman's Fund Insurance Company, was a notable figure and an authority on marine insurance and vessels. He was associated with the practical affairs of the shipping world through much of the development of San Francisco maritime commerce. He was intimate with the constructive events in that district since 1860.

Captain Turner became a sailor at 15 and a navigator at 18. Federal authorities withheld a license, however, until he reached his majority, after which he was in active command of various vessels for twelve years.

Captain Turner added distinction to his profession of marine insurance. As marine surveyor for the firm of Gutte & Frant and others he was in constant demand for the surveying of unusual risks and wrecking work.

Although a San Franciscan since 1860 the surveying work of Captain Turner extended from Northwest Alaska to South America and to the Hawaiian Islands.

Succeeding Captain Turner as marine surveyor for the Fireman's Fund Insurance Company is A. W. Young. Mr. Young has been with the company a comparatively short time.

**B. J. Fotheringham** has opened the Portland, Oregon, offices of the Ocean Motorship Company.

**Captain Charles Clarkson** recently resigned as master of the Shipping

Board vessel West Mahwah to become manager of the North Coast Stevedoring Company of San Francisco.

**W. A. Chapman**, traveling purser of the Toyo Kisen Kaisha, recently resigned to engage in private business at Berkeley, California.

**Captain George Anderson**, former chief inspector for the Philippine lighthouse service, has opened a marine survey office at Hongkong. Associated with him is **M. D. Ashe**, former claim agent for the Pacific Commercial Company of Manila.

**E. J. Brown, Jr.**, former acting agent for the Pacific Mail, in the Philippines, has been appointed general agent for the company there. He succeeds R. C. Morton, now Oriental manager of the United States Shipping Board.

**Cyrus A. Anderson** succeeds John W. Chapman as Pacific Coast manager for Davies-Turner Company, freight forwarding concern. John W. Chapman has resigned the position to give his whole time to representing the Williams Line on the Pacific Coast.

**Carl D. Sasher** recently assumed management of the Tacoma Merchants' Exchange.

**J. L. Ackerson** recently was elected a member of the board of directors of the Merchant Shipbuilding Corporation.

**R. H. M. Robinson**, president of the Merchant Shipbuilding Corporation, has been elected president of the United American Lines.

**S. F. Booth** has been appointed assistant general freight agent of the Pacific Mail Steamship Company.

**Van Lear Black** has been elected to the directorate of the American Ship & Commerce Corporation.

**C. R. Wright**, resident engineer of the Aberdeen, Washington, port commission, has resigned. C. A. Strong of Tacoma, Washington, remains as consulting engineer until port terminal work has been completed. A port manager will be employed by the commission.

**George A. Browning**, who recently resigned as superintendent engineer of the Wallace Shipbuilding & Drydock Company, Vancouver, British Columbia, after eight years of service, has been appointed marine superintendent of the Vancouver Engineering Works.

**C. W. Wiley**, president of the Todd Drydocks, Seattle, and the Todd Drydock & Construction Corporation, Tacoma, has been made chairman of the board of each company, and has been succeeded as president of the Todd Drydocks by **H. W. Kent**, vice-president and treasurer, and as president of the Todd Drydock & Construction Corporation by **J. A. Eves**, vice-president and general manager. **A. R. Hunt**, assistant general manager of the Todd Drydocks, has been made vice-president and general manager, and **O. M. Lund**, secretary and assistant treasurer, becomes secretary and treasurer. **W. C. Nickum**, naval architect, and **John Gardner**, head of the engineering department, become vice-presidents of the Todd Drydock & Construction Corporation. Mr. Wiley became president of the Seattle Construction & Drydock Company when it was purchased by William H. Todd in July, 1916, and likewise assumed the presidency of the Todd Drydocks when the Seattle company was bought by the Shipping Board and Mr. Todd organized the Todd Drydocks. The two Todd yards alone of all steel shipbuilding plants on Puget Sound have survived the post-war slump.

**Captain M. D. Harboard** has resigned as president of the Victoria Shipowners, which has had three wood barkentines under construction at the Cholberg Shipyards, Vancouver, British Columbia. The Victoria Shipowners has been having considerable difficulty, largely because the Canadian government which had agreed to advance funds, withdrew when costs of construction exceeded estimates.

**R. J. Ringwood**, recently manager of the operating department, Shipping Board, has been appointed freight traffic manager of the Pacific Steamship Company with headquarters in Seattle.

**H. S. Eaton** has been transferred from the San Francisco office of the Pacific Steamship Company to Portland, Oregon, where he will act as general agent, succeeding Floyd N. Bush, port agent, who resigned to become Portland representative of Sudden & Christenson.

**Herbert Witherspoon** has been elected chairman of the board of the Kilbourne & Clark Manufacturing Company, Seattle. Other officials and directors are: H. F. Jefferson, vice-president and general manager; E. L. Skeel, secretary and treasurer; Harry C. Allen, F. H. Luce, F. K. Easter, F. W. Strang, George H. Guy, J. W. Maxwell, A. F. Anderson and L. C. Henry.

## Changes of Address

**The Enterprise Foundry Company** has removed its office from 20-24 Steuart street, San Francisco, to 2902 Nineteenth street.

**The Uehling Instrument Company** announces that hereafter its principal office will be situated at the factory, 473 Getty avenue, Paterson, New Jersey, instead of at 71 Broadway, New York City.

**The Wager Furnace Bridge Wall Company** has removed its office from 149 Broadway, New York City, to the plant, 108-110 Academy street, Jersey City, New Jersey.

**The Sun Shipbuilding Company** has opened offices in the Cunard building, 25 Broadway, New York City. The Opposed Piston Oil Engine Company will occupy the offices with the Sun.

**McCormick, McPherson & Lapham**, steamship agents, have removed their Los Angeles office from 548 Spring street to the Central building, 108 West Sixth street.

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### STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912,

Of Pacific Marine Review, published monthly at 576 Sacramento street, San Francisco, Cal., for April 1, 1922.

State of California,
City and County of San Francisco, ss.

Before me, a notary public in and for the State and city and county aforesaid, personally appeared B. N. DeRochie, who, having been duly sworn according to law, deposes and says that he is the business manager of the Pacific Marine Review, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher—J. S. Hines, 9 Scenic Way, San Francisco, Cal.

Editor—A. J. Dickie, 1036 Mariposa avenue, Berkeley, Cal.

Managing Editor — Andrew Farrell, 1512 Sonoma avenue, Berkeley, Cal.

Business Manager, B. N. DeRochie, 943 Fresno avenue, Berkeley, Cal.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock.)

J. S. Hines, 9 Scenic Way, San Francisco, Cal.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

B. N. DeROCHIE,
Business Manager.

Sworn to and subscribed before me this 23d day of March, 1922.

(Seal) E. M. CLARK,
Notary Public in and for the City and County of San Francisco, State of California.
My commission expires April 22, 1924.

# AMERICAN SHIPBUILDING

Shipbuilding is decidedly on the mend. Although steel construction has not made any great recovery, as owners are awaiting definite action by Congress before going ahead with work, there is nevertheless a remarkable volume of small work on hand, and some contracts for steel vessels have been let or are about to be placed. Should Congress pass a law satisfactory to shipowners there is little doubt that there will be an immediate reaction in shipbuilding, for a pronounced shortage exists of combination vessels, fast freighters and refrigerator steamers. Even pending passage of a bill conditions are improving. A significant fact is that the Atlantic Coast Shipbuilders' Association reports that for the first time since the signing of the Armistice shipyards and repair plants of the Atlantic and Gulf are increasing their working forces, though the increase remains slight.

Steel construction on the Pacific, which had been on a low ebb since January, will take on life late in April or early in May with the laying of keels of the 20,000-ton ore and coal carriers lebore and Chilore by the Union Plant of Bethlehem. There was, however, a threat of a strike in San Francisco Bay shipyards, which announced wage reductions of 10 per cent, effective April 17.

## Recent Contracts

**St. Helens Shipbuilding Company,** St. Helens, Oregon, four fuel barges for United States Engineers, 51 x 22-6 x 2-1, 42 tons' displacement.

**Brewer Drydock Company,** Staten Island, New York, four refrigerator barges for the Baltimore & Ohio Railroad.

**Charles A. Morse,** Thomaston, Maine, 82-foot Diesel auxiliary schooner for William M. Butler.

**Consolidated Shipbuilding Corporation,** New York City, steel motor houseboat, 125-7x21-3x4-3 draft; two nine-cylinder heavy-oil engines of 180 H. P. each, for John Ringling.

**Hildebrandt Drydock Corporation,** Kingston, New York, three wood tugs, powered with 240 B. H. P. Nelseco engines, for Transmarine Corporation.

**Tebo Yacht Basin Plant, Todd Shipyards Corporation,** New York City, steel Diesel yacht, 129 x 23 x 6-6 draft; powered with two six-cylinder Winton engines of 225 B. H. P. each, for Merrill B. Mills.

**Fraser, Brace, Ltd.,** Three Rivers, Quebec, four Lake freighters, 250 x 43 x 20-6, triple expansion engines, two Scotch boilers, for George Hall Coal Company of Canada.

**Manitowoc Shipbuilding Corporation,** Manitowoc, Wisconsin, Lake freighter, 450 x 60 x 30, 7500 D. W. T., for unnamed interests.

**Rice Brothers Corporation,** Boothbay Harbor, Maine, steel combination vessel for Lake interests, unnamed.

**Bethlehem Shipbuilding Corporation, Baltimore Drydock Plant,** Baltimore, three steel carfloats, 270 x 38 x 10-6 draft; 325 x 38 x 10-6 draft; 180 x 36 x9 draft, for Lehigh Valley Railroad.

**American Bridge Company,** Pittsburgh, four decked barges, 180 x 36 x 8, for undisclosed interests; one wharfboat, 160 x 26 x 5, for undisclosed interests.

**W. F. Stone & Son,** Oakland, California, tug, 65 x 16 x 5-6, for Alaska Packers' Association; two trawlers, 65 x 16 x 7 draft, for Western Fish Company.

**Great Lakes Engineering Works,** Detroit, ore-carrier for Wilson Transit Company.

## Work in Prospect

The port of Portland commission, Portland, Oregon, will have plans and estimates prepared for a sternwheel towboat.

Grover A. Whalen, commissioner of plants and structures, New York City, has requested an appropriation of $1,100,000 for seven ferryboats for the East River, each 170 feet long by 64 broad, propelled by Diesel-electric drive; $550,000 for purchase and reconditioning of ferries; and other items, the aggregate of all being $2,696,000.

The Alaska Steamship Company reported to have bought the motorbarges Dawnlite, Daylite, Sunlite and Moonlite and to be planning to install heavier engines in them. Each is of 1601 net tons except the Moonlite, which is of 1380. The report has not been confirmed by the company.

The Alaskan Steamship Company is reported to be planning the construction of a combination vessel to replace the lost Alaska. No confirmation of the report has been obtained of the company.

The Fruit Auction Company, New York, is reported to have plans for the construction of a refrigerator vessel of 8700 tons, presumably deadweight, to ply between Chile and New York. It would be powered with Diesel engines and have accommodations for 120 passengers. Plans of a new ferry have been submitted to the North Vancouver, British Columbia, city council. The vessel would be 172 feet over all, 160 between perpendiculars; 47 feet broad over the guards, 31 molded; 14 in molded depth; engines would be inverted triple-expansion, 600 indicated horsepower at 135 revolutions a minute, steam to be supplied by two Babcock & Wilcox watertube boilers. The ferry, if built, probably will be awarded to the Wallace Shipbuilding & Drydock Company.

## Important Repair Awards

**Newport News Shipbuilding & Drydock Company,** Newport News, reconditioning the United American steamship Coastwise, $38,100.

**Bethlehem Shipbuilding Corporation, Union Plant,** San Francisco, reconditioning U. S. S. B. Creole State, $40,398.

**Moore Shipbuilding Company,** Oakland, California, reconditioning U. S. A. T. Thomas, $29,895.

**Bethlehem Shipbuilding Corporation,** reconditioning U. S. S. B. Granite State, $157,680.

## Eastern Keel-layings

Ferry, Captain J. C. Dahmer, Defoe Boat & Motor Works, March 15; freight vessel, H. E. Searfoss, March 20; wood yacht, K. M. Devos, March 10; wood yacht, J. H. Reid, March 30.

Delivery No. 6, motor barge, Standard Oil Company of New York, Staten Island Shipbuilding Company, February 20.

Carfloat, Brooklyn Eastern District Terminal, New York Shipbuilding Corporation, April 10.

Sternwheel ferryboat, Pan American Petroleum & Transport Company, Charles Ward Engineering Works, March 15.

## Eastern Launchings

Marore, ore and oil carrier, Ore Steamship Company, Bethlehem Shipbuilding Corporation, Sparrows Point Plant, April 1.

Genl. Frank M. Coxe, river steamer, War Department, Charles Ward Engineering Works, March 3.

## Atlantic Deliveries

Lightship No. 105, Bureau of Lighthouses, Consolidated Shipbuilding Corporation, April 10.

R. D. Leonard, tanker, Atlantic Refining Company, Bethlehem Shipbuilding Corporation, Harlan Plant, February 17.

# Progress of Work

## Atlantic, Lakes, Rivers

**All navy yard work is suspended or is progressing slowly.**

### AMERICAN BRIDGE COMPANY, PITTSBURGH, PENN.

Purchasing Agent: W. G. A. Millar.

Fifteen decked barges, 120 LBP; 30 beam; 7 deep; US Engineers, Memphis, Tenn.; 7 launched, 6 delivered.

Two decked barges, undisclosed interests, 150x32x7-6; delivered.

Twelve sand barges, J. K. Davison & Bro., Pittsburgh, 135 x 26 x 10; 2 launched.

Two sand barges, H. H. Halliday Sand Co., Cairo, Ill.; 130x30x7-6; launch May/22, est.

One dredge hull, H. H. Halliday Sand Co, Cairo, Ill; 110 x 30 x 5-6; launch June/22, est.

Two oil barges, Gulf Refining Co; 158x36x11; launch May/22, est.

Four decked barges, undisclosed interests, 180x36x8; launch July/22, est.

One wharfboat, undisclosed interests, 160x26x5; launch July/22, est.

### BATH IRON WORKS, LTD., BATH, MAINE

Purchasing Agent: John L. P. Burke.

Light vessel 106, hull 87, second-class light vessel US Dept of Commerce, 109-6 LBP, 30 beam, 14-4 loaded draft, 9½ speed; comp eng, 400 IHP; 2 Scotch boilers, 10-6 x 11-4; keel Apr/22, est; launch Oct/22, est; deliver Dec/22, est.

Light vessel 107, hull 88, sister to above; keel May1/22, est; launch Nov/22, est; deliver Jan/23, est.

Light vessel 108, hull 89, sister to above; keel June1/22, est; launch Jan/23, est; deliver Mar/23, est.

Light vessel 109, hull 90; sister to above; keel July1/22, est; launch Mar/23, est; deliver Apr/23, est.

Light vessel 110, hull 91, sister to above; keel Aug1/22, est; launch May/23, est; deliver June/23, est.

### BETHLEHEM SHIPBUILD'G CORPORATION, BALTIMORE DRYDOCK PLANT, BALTIMORE

Fort McHenry, hull 125, tanker builder's account; 340 LBP; 49 beam; 23-6 loaded draft; 10 loaded speed; 6000 DWT; rec eng, 2000 IHP; 2 Scotch boilers, 15-3; keel Nov24/20; launch Feb1/22.

Hull 129, carfloat Lehigh Valley R. R.; 270 LBP; 38 beam; 10-6 loaded draft.

Hull 130, carfloat Lehigh Valley R. R.; 325 LBP; 38 beam; 10-6 loaded draft.

Hull 131, carfloat Lehigh Valley R. R.; 180 LBP; 36 beam; 9 loaded draft.

### BETHLEHEM SHIPBUILDING CORP., FORE RIVER PLANT, QUINCY, MASS.

Lexington, hull 1300, battle-cruiser U S N.

Raleigh, hull 1382, scout cruiser U S N.

Detroit, hull 1383, scout cruiser U S N.

Massachusetts, hull 1400, battleship USN.

And the following nineteen submarines USN: hulls 1309 to 1320 inc, submarines S-18 to S-29 inc; hulls 1389 to 1394 inc; submarines S-42 to S-47 inc.

### BETHLEHEM SHIPBUILDING CORP., HARLAN PLANT, WILMINGTON, DEL.

R. D. Leonard, hull 3477, tanker Atlantic Refining Co; 226 LBP; 39 beam; 17 loaded draft; 8½ loaded speed; 2600 DWT; turb eng, 750 IHP; B & W boilers; keel Aug20/21; launch Dec31/21; **deliver Feb17/22.**

Hull 3478, yacht Keith Spaulding; 160 LBP; 30 beam; 15-3 deep; 360 DWT; Diesel engs, 360 IHP.

### BETHLEHEM SHIPBLDG. CORP., SPARROWS POINT PLANT, SPARROWS POINT, MD.

Western World, hull 4197, combination USSB; 518 LBP; 72 beam; 30-7 loaded draft; 16 loaded speed; turb eng, 10,000 IHP; 8 Yarrows boilers; keel July29/20; launch Sept 17/21.

Marore, hull 4212, ore and oil Ore SS Co; 550 LBP; 72 beam; 32-4 loaded draft; 11½ loaded speed; 20,000 DWT; turb eng, 4600 IHP; 3 Scotch boilers, 17-6x12; keel May 2/21; **launch Apr1/22.**

Steelore, hull 4213, ore and oil Ore SS Co; sister to above; keel July 20/21.

### CONSOLIDATED SHIPBUILDING CORPORATION, MORRIS HEIGHTS, N. Y.

Purchasing Agent: Bruce Scrimgeour.

Lightship No. 105, US; hull 246; 146-3 LOA; 30 beam; 12-7 loaded draft; 825 DWT; comp eng, 400 IHP; 2 Scotch boilers, 10-6 diam; keel Mar4/21; launch Nov16/21; **deliver Apr10/22.**

### WILLIAM CRAMP & SONS SHIP & ENGINE BUILDING CO., PHILADELPHIA

Purchasing Agent: Ed. C. Geehr.

Richmond, hull 448, scout cruiser 29/21; 88 per cent comp Apr 1.

Concord, hull 449, scout cruiser USN; keel Mar29/20; launch Dec 15/21; 84 per cent comp Apr 1.

Trenton, hull 501, scout cruiser USN; keel Aug18/20; 58 per cent comp Apr 1.

Marblehead, hull 502, scout cruiser USN; keel Aug4/20; 47 per cent comp Apr 1.

Memphis, hull 503, scout cruiser USN; keel Oct14/20; 41 per cent comp Apr 1.

Installing Diesel engines in M.S. Californian and Missourian.

### DEFOE BOAT & MOTOR WORKS, BAY CITY, MICH.

No name, hull 59, ferry Captain J. C. Dahmer; 65 LBP; 20 beam; 5 draft; 11 loaded speed; Fairbanks-Morse heavy-oil eng; **keel Mar15/22;** launch May1/22, est; deliver May 15/22, est.

No name, hull 60, yacht Thos. H. Gill; 98 LBP; 15 beam, 6 draft; 14 speed; Standard Gas eng; keel Apr 15/22, est; launch July1/22, est; deliver Sept1/22, est.

No name, hull 61, yacht builder's account; sister to above; keel Apr 15/22, est; launch July1/22, est; deliver Sept1/22, est.

American Girl, hull 62, frt vessel H. E. Searfoss; 65 LBP; 14 beam; 6 draft; 10 speed; Kahlenberg eng; **keel Mar20/22;** launch May10/22, est; deliver June1/22, est.

No name, hull 63, wood yacht K. M. Devos; 65 LBP; 12½ beam; 4 draft; 22 speed; gas eng; **keel Mar 10/22;** launch May15/22, est; deliver June 15/22, est.

No name, hull 64, wood yacht J. H. Reid; 42 LBP; 11 beam, 3½ draft; 11 speed; gas eng; **keel Mar 30/22;** launch May15/22, est; deliver June15/22, est.

### FEDERAL SHIPBUILDING CO., KEARNY, N. J.

Purchasing Agent: J. L. Hastings.

Hull 68, freighter undisclosed interests; 425 LBP; 56 beam; 27 loaded draft; 11½ loaded speed; 10,025 DWT; Parsons turbines, 3100 SHP; 3 Scotch boilers, 15-3x11-3¾; keel Mar16/22; launch Aug1/22, est; deliver Sept1/22, est.

### FRASER, BRACE, LIMITED, THREE RIVERS, QUEBEC

Lake freighter George Hall Coal Company of Canada; 250 LBP; 43 beam; 20-6 deep; 12 loaded speed; TE eng, 19x32x56-36 stroke; 2 Scotch marine boilers, 14-7x10-8, coal burning.

Sister to above.

Sister to above.

Sister to above.

### KYLE & PURDY, INC., CITY ISLAND, NEW YORK CITY

Purchasing Agent: T. A. Kyle.

No name, hull 154, steel ferryboat department of plants and structures, City of New York; 90 LBP; 30 beam; 6-8 loaded draft; 10 miles loaded speed; 100 DWT; comb eng, 200 I HP; Roberts tube boilers; keel June 1/22, est.

Mirimar, hull 155, steel houseboat Mr. Eisenlohr; 101 LBP; 21 beam; 4-6 loaded draft; 12 miles loaded speed; 105 DWT; diesel eng, 120 I HP; keel Sept/21; launch Apr/22, est.

## LAKE TORPEDO BOAT CO., BRIDGEPORT, CONN.

Purchasing Agent: C. D. Maxfield.

S-48, hull 48, submarine U S N; launch Feb26/21.

S-49, hull 49, submarine U S N; launch Apr23/21.

S-50, hull 50, submarine U S N; launch June18/21.

S-51, hull 51, submarine U S N; launch Aug20/21.

## MERCHANT SHIPBUILDING CORPORATION, CHESTER, PENN.

Vice-President: J. L. Ackerson.

Californian, hull 385, freighter American-Hawaiian SS Co; 445 LBP; 59-8 beam; 28-6 loaded draft; 11½ speed; 11,000 DWT; 2 6cyl, 4-cycle Diesel engs, 4500 metric; 1 vertical donkey, 400 sq ft HS; keel Feb5/21; launch Nov14/21; at Cramp yard for installation of Diesel engines.

Missourian, hull 386, freighter American-Hawaiian SS Co; sister to above; keel Feb10/21; launch Dec 14/21; at Cramp yard for installation of Diesel engines.

## NAVY YARD, BOSTON

Whitney, destroyer tender No. 4 USN; 460 LBP; 60-10⅛ molded beam; 21-0½ normal draft; 16 loaded speed; 10,600 normal disp; geared Parsons turbs, 7000 SHP; 2 WT exp boilers; keel Apr 23/21; launching indefinite.

## NAVY YARD, PHILADELPHIA

Dobbin, hull 7, destroyer tender USN; 460 LBP; 60-10 beam; 21 loaded draft; 16 loaded speed; 10,600 tons disp; Parsons geared turb single screw engs, 7000 SHP; 2 WT boilers; keel Dec23/19; launch May 5/21; deliver date not determined.

Constitution, hull 8, battle cruiser USN; 850 LBP; 105-4 beam; 30-11½ loaded draft; 33½ loaded speed; 43,500 disp; electric drive, 180,000SHP; 16 WT boilers; keel Sept25/20.

United States, hull 9, battle cruiser USN; 850 LBP; 105-4 beam; 30-11½ loaded draft; 33½ loaded speed; 43,500 disp; electric drive, 180,000 SHP; 16 WT boilers; keel Sept25/20.

## NEWPORT NEWS SHIPBUILDING & DRYDOCK COMPANY, NEWPORT NEWS

Purchasing Agent: James Plummer, 233 Broadway, New York City.

West Virginia, hull 211, battleship USN; 600 LBP; 97-3½ beam; 30-6 mean draft; 32,600 normal disp; 21 speed; GE turbo-elec drive, 28,900 SHP; 8 B&W WT boilers, oil, 41,768 sq ft plus 4168 superheat; keel Apr 12/20; launch Nov19/21.

Constellation, hull 215, battle-cruiser U S N; 850 LBP; 101-8¼ beam; 31 mean draft; 43,500 normal disp; 33¼ speed, est; Westinghouse turbo-elec drive, 180,000 SHP; 16 WT boilers, oil, 198,000 sq ft plus 18,000 superheat; keel Aug18/20.

Ranger, hull 215, battle-cruiser U SN; sister to above; keel June23/21.

Iowa, hull 258, battleship USN; 660 LBP; 105 beam; 33 mean draft; 43,200 normal disp; 23 speed; GE turbo-elec drive, 60,000 S H P; 12 White-Forster WT boilers, oil, 82,800 sq ft plus 8940 superheat; keel May17/20.

Dolphin, hull 263, Diesel yacht Cox & Stevens; 180-6 LOA; 24 beam; 14 deep; keel Feb27/22.

## NEW YORK SHIPBUILDING CORPORATION, CAMDEN, N. J.

Purchasing Agent: L. G. Buckwalter.

Eurana, hull 264, bulk oil stock; 419-3 LBP; 56-3 beam; 25-9¼ loaded draft; 10¾ loaded speed; 9870 DWT; 3 cyl TE engs, 3000 SHP; 3 SE Scotch boilers, 15-10x11-4; keel Jan17/21; launch July16/21.

No name, hull 265, bulk oil stock; sister to above.

Saratoga, hull 199, battle cruiser USN; 874 LOA; 850 LBP; 105-5¼ extreme beam; 31 mean draft; 43,500 normal disp; 33¼ loaded speed; GE turbo-electric drive; 180,000 SH P; 16 WT boilers, 198,000 sq ft plus 18,000 superheat; keel Sept25/20.

Colorado, hull 200, battleship US N; 624 LOA; 600 LBP; 97-3½ beam waterline; 30-6 mean draft; 32,600 normal disp; 21 loaded speed; Westinghouse turbo-electric drive, 28,900 SHP; 8 B&W WT boilers, 41,678 sq ft plus 4169 superheat; keel Mar29/19; launch Mar22/21.

Washington, hull 201, battleship USN, sister to above; keel June30/19; launch Sept1/21.

Kamoi, hull 267, fuel ship Japanese Navy; 497-8 LOA; 67 beam; 28 designed draft; 15 loaded speed; 13,000 DWT; elec drive, 8000 SHP; 4 B&W boilers; keel Sept14/21.

Hull 268, carfloat Brooklyn Eastern District Terminal; 340 long; keel Apr10/22.

Hull 269, carfloat Brooklyn Eastern District Terminal; 340 feet long.

## PORT ARTHUR SHIPBUILDING CO., PORT ARTHUR, ONT.

Purchasing Agent: W. E. Decker.

Hull 47, single-deck bulk freighter Mathews Steamship Co; 530 LBP; 58 beam; 12 loaded speed; 10,000 DWT; 3-cyl TE engs, 25½-41-67x42, 2100 IHP; 3 Scotch boilers, 13-6; keel not laid.

## THE PUSEY & JONES COMPANY, WILMINGTON, DELAWARE

Purchasing Agent: Jas. Bradford.

No name, hull 1020, combination steamer, sound type, Seaboard Bay Line; 320 LBP; 44 beam at waterline; 14-6 loaded draft; 18 loaded speed; 800 DWT; 4-cyl TE engs, 3000 IHP; 4 Scotch boilers, 13-3x 11-6; keel Feb23/22; launch July 7/22, est; deliver Oct/22, est.

No name, hull 1021, combination steamer, sound type, Seaboard Bay Line; sister to above; keel Feb23/22; launch Aug7/22, est; deliver Nov/22,est.

## STATEN ISLAND SHIPBUILDING COMPANY, STATEN ISLAND, NEW YORK

Purchasing Agent: R. C. Miller.

Delivery No. 6, hull 739, motor barge Standard Oil Co, N Y; 120 LBP; 25 beam; 11-9 loaded draft; 8 loaded speed; 200 gross tons; Bolinder eng, 300 IHP; keel Feb20/22; launch May25/22, est; deliver May 29/22, est.

## SUN SHIPBUILDING COMPANY, CHESTER, PENN.

Purchasing Agent: H. W. Scott.

Agwiscot, hull 42, tanker A. G. W. I. S. Co; 480 LBP; 65-9 beam; 26-7 loaded draft; 12 loaded speed; 12,500 DWT; single screw QE engs, 4300 IHP; 4 SE Scotch boilers, 15-10 x11-11¼; keel Dec23/20.

Ferryboat Pennsylvania Railroad; 167 long; 55 beam; 14-8 deep; two screws; 3-cyl comp engs, 700 IHP; 2 B&W WT boilers; keel Feb16/22.

Ferryboat Pennsylvania Railroad, sister to above; keel Feb20/22.

Passenger vessel Inter - Island Steam Navigation Co., Honolulu; 345 long; 46 beam; 32 deep; 16½ speed; 4-cyl TE engs, 5000 IHP; 4 B&W WT boilers; to carry 434 passengers; keel not laid.

## THE CHARLES WARD ENGINEERING WORKS, CHARLESTON, WEST VIRGINIA

Purchasing Agent: E. T. Jones.

Gen'l Frank M. Coxe, hull 17, river str War Dept; 144 LBP; 28 beam; 9 loaded draft; 16 miles loaded speed; 175 DWT; TE eng, 1050 I HP; 2 Ward WT boilers, 2094 sq ft heating surface; keel July 16/21; launch Mar3/22.

Gen'l John McE. Hyde, hull 18, river str War Dept; sister to above; keel July18/21.

No name, hull 19, sternwheel towboat Pan American Petroleum & Transport Co; 136-6 LBP; 32 beam; 5 loaded draft; simple high-pressure non-condensing eng; 4 Miss River boilers; 44-in dia; keel Mar15/22; deliver May1/22, est.

No name, hull 20, sidewheel car ferry Missouri-Illinois R R Co, sub-

(Continued on page 16, Adv. Sec.)

# Federal Marine Paints

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# HARBOR DEVELOPMENT

**Warehouse for Seattle**—The Seattle Warehouse Company has obtained a permit for the construction of a new building having 21,000 square feet of floor space and costing $40,000. It will be built at 5245 East Marginal Way.

**Portland Dredging**—James Polhemus, general manager of the port of Portland commission, Portland, Oregon, has submitted a program that provides for the dredging of about 3,000,000 cubic yards of matter below the St. Johns bridge of the Spokane, Portland & Seattle Railroad. The work will clear the last area of the harbor proper. It will not be undertaken until October.

**Hawaiian Bond Sale**—Presidential approval has been requested by the Territory of Hawaii for the sale of $1,350,000 worth of bonds. Maritime work would be provided for as follows: addition to Kuhio wharf shed, Hilo, $50,000; completion of Piers 8, 9 and 10, Honolulu, $647,500; dredging Kahului, Maui, $50,000; new wharf, Molokai, $50,000.

**Mexican Developments** — Work to cost $6,000,000 has been authorized by President Obregon of Mexico. Five million dollars will be spent in completing the development of Manzanillo, which was halted by revolutions, and the remaining million will be used for the construction of a floating drydock, marine railway and repair equipment at Guaymas.

**Esquimault Work Stopped** — The new Canadian government, after discussing for several weeks the construction of a drydock at Esquimault, British Columbia, finally has ordered all work stopped. The government insists that public expenditures be reduced.

**Canadian Pacific Work**—The Canadian Pacific Railway is spending $25,000 in improving Pier H, Vancouver, so that deep-water steamships will be able to use it. A minimum of 25 feet of water at low tide will be provided.

**Los Angeles Plans**—The Santa Fe Railroad will take immediate steps to connect its tracks with the municipal belt line railway, Los Angeles harbor, thus gaining access to tidewater. The board of harbor commissioners has decided to supplant its former plan of building 3200 feet of wharves on the Terminal Island waterfront with one that provides for four 1100-foot slips at right angles to the channel.

**Wrangell Breakwater** — A breakwater to be built at Wrangell, Alaska, for the protection of fishing and other small vessels has been recommended to Congress by the board of engineers for rivers and harbors.

**Kobe Customs Building**—The customs authorities of Kobe, Japan, have plans for the construction of a building to replace the offices destroyed by fire recently. The cost is estimated at yen 1,000,000.

**New C. P. Pier**—Work on a new Canadian Pacific pier at Vancouver, British Columbia, will begin soon. The pier will cost about $1,500,000, will be double decked, of steel and concrete.

## New Companies

C. Erickson and J. Urquhart, shipwrights, calkers and sparmakers, have formed a partnership under the firm name of Erickson & Urquhart, 16 Folsom street, San Francisco.

B. F. Wood, J. A. Wood and A. G. Hill have organized a new shipbuilding company in the Bronx, New York City, to engage in the construction of boats and hydroplanes.

J. W. Wunsch and C. V. TerKuile have formed the firm of Wunsch & TerKuile, New York City, to act as selling agents for manufacturers of material-handling equipment. The firm will act as exclusive selling agents for the Silent Hoist Company and also will represent several other manufacturers of marine equipment in this territory. Mr. Wunsch is a graduate mechanical engineer, with many years of experience in designing and consulting work. He is the founder of the Silent Hoist Company and will continue in an engineering advisory capacity with that firm. Mr. TerKuile is also a graduate engineer and has been engaged in engineering sales work for many years. He was formerly on the engineering staff of E. I. Du Pont de Nemours & Company and the New York Shipbuilding Company.

# Hague Rules Approved

THE executive committee of the National Foreign Trade Council has adopted the following report on The Hague Rules:

The executive committee of the National Foreign Trade Council, having considered The Hague Rules, 1921, and the arguments pro and con bearing thereon, is of the opinion that the National Foreign Trade Council should endorse The Hague Rules, 1921, and should urge their early adoption by American ocean carriers. The committee believes that these rules embody as favorable a readjustment of the distribution of liability between shipper and carrier as can at present be secured. While fully cognizant that these rules do not satisfy many of the demands of the shippers, the committee is of the belief that their adoption will constitute a substantial step in the right direction, and will, in fact, confer very real benefit on the foreign trade of the United States.

### An International Business

The committee wishes to point out that ocean transportation is an international business, and that American companies cannot continue to compete in the carrying trade of the world if saddled with burdens not imposed on their foreign competitors. If it is desired to secure additional modifications in the relationship between shipper and carrier, the committee feels that action to this end should be taken simultaneously by the leading maritime powers. The committee is of the opinion that the principle of uniformity of commercial documents, to which the National Foreign Trade Council has frequently declared its allegiance, will be materially aided by the adoption of The Hague Rules, 1921.

### Simultaneous Action Urged

The committee urges upon American ocean carriers the desirability of putting these rules into effect at the same time that they are first applied in Great Britain, thus enabling our shippers to offer their foreign customers shipping documents providing as great a degree of protection as will be afforded by our competitors' bills of lading.

Inasmuch as The Hague Rules, 1921, embody some provisions not in complete conformity with the Harter Act, 1893, which is the controlling legislation in the United States, the committee is of the opinion that Congress should pass enabling legislation which, while retaining the Harter Act in force, will permit American ocean carriers to make contracts in accordance with the provisions of The Hague Rules, 1921. The committee feels that such enabling legislation will meet the situation, and can be secured more promptly than a general revision of the Harter Act to bring it into conformity with The Hague Rules.

Pacific Marine Review
The National Magazine of Shipping

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Pacific Marine Review, Vol. 19, No. 6. Published Monthly at San Francisco. Entered as second class matter at the post office at San Francisco under the Act of March 3, 1879. $3.00 a year.

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# Pacific Marine Review

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### ERRATA

The publishers regret that an irrelevant illustration was used in advertisement of American Engineering Company in this issue and the page was entirely printed before the error was detected.

We have made a corrected insertion of the advertisement on page three of this number, using the right half-tone for illustration.

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J. S. HINES
Publisher

B. N. De ROCHIE
Business Manager

A. J. DICKIE
Editor

ANDREW FARRELL
Associate Editor

L. R. MERRICK
Field Editor

M. G. HEDIN
Advertising Manager

PACIFIC MARINE REVIEW,
THE NATIONAL MAGAZINE OF SHIPPING
576 Sacramento Street, San Francisco

339 at No. 30 Church Street,
New York City

500 Citizens National Bank Building,
Los Angeles

Official organ of the Pacific American Steamship Association

Entered as second class mail matter June 20, 1913, at postoffice, San Francisco, under the act of March 3, 1879.

Subscription price, a year (domestic) .......... $2.00
(foreign) .......... 3.00
Single copies .......... .25

Published on the fifteenth of each month. Advertising forms close on the tenth and editorial forms on the twelfth.
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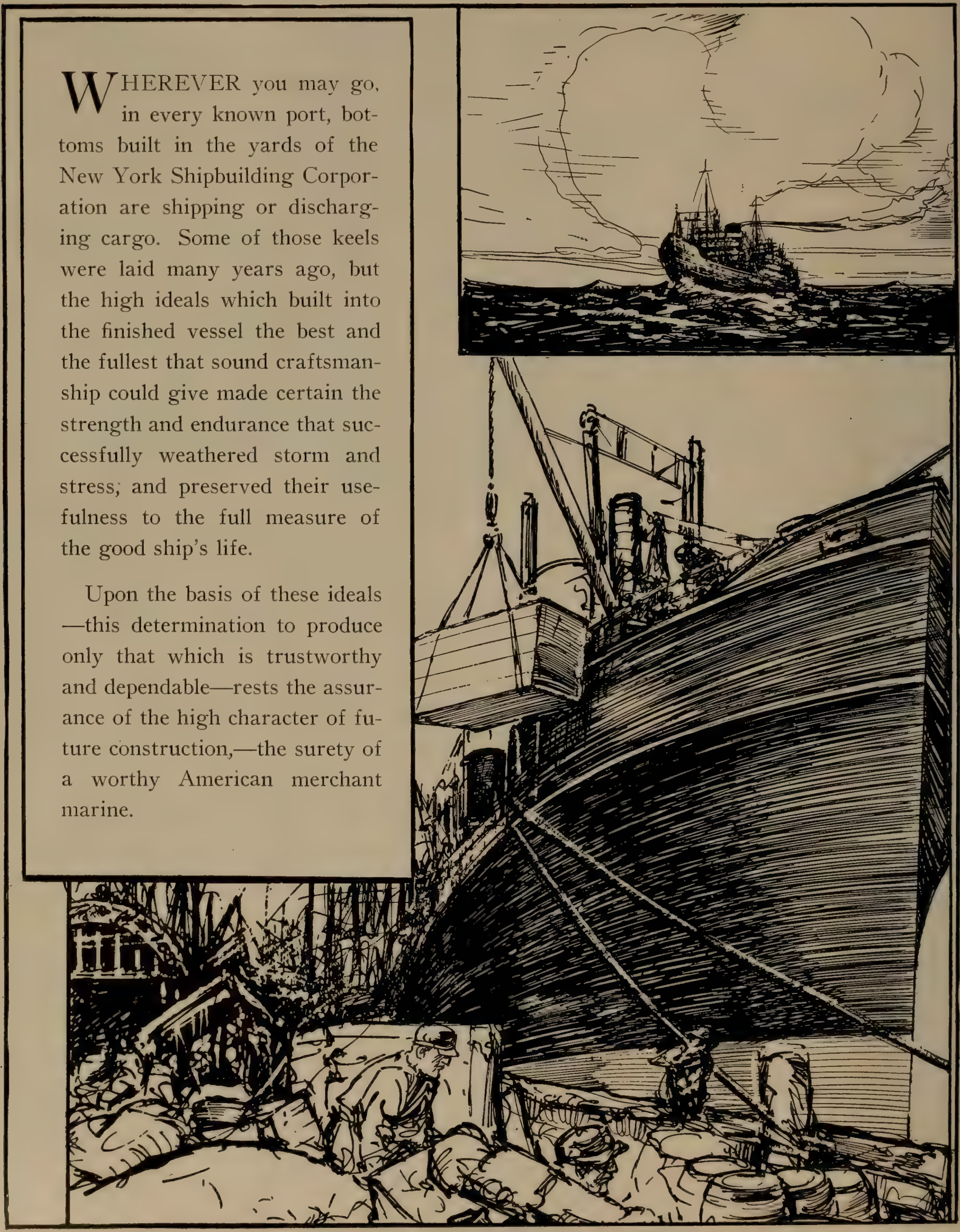

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NEW YORK, N.Y. CAMDEN, N.J.

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The National Magazine of Shipping
*June, 1922*
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## An Excellent Showing

THAT is a decidedly heartening exhibit in the tentative report of General Dawes, director of the budget, which shows that the Shipping Board will reduce losses from $148,910,529 in the 1920-1921 fiscal year to about $52,500,000 in the year ending June 30, 1922. The latter figure is, of course, estimated, but as the results of operating during the first eight months of the year are known definitely the final outcome probably will depart little from General Dawes' estimates.

One might conclude too hastily that the savings have been effected by the retirement of vessels. In part that conclusion would be true, for deadweight tonnage in operation declined from 9,290,426 in July, 1920, to 3,794,295 in March, 1922, the last month for which General Dawes gives figures. But on the other hand it is evident that great reductions have been made in the loss incurred in operating each ton of steamship. In July, 1920, the average loss to the ton was about 87 cents; it rose to a trifle more than $1 in August, when business depression became worse; and despite withdrawals of vessels, which began on a large scale in the autumn of 1920, it had attained the enormous average of $2.87 in April, 1921. In May, 1921, tonnage in operation was 5,524,525 and losses $6,949,220, but this relatively good showing was offset by a leap in losses in June to $12,055,536. This huge total was reduced to $6,251,820 in July, and each month thereafter has witnessed a further saving, with the result that the loss to the ton in February, 1922, the last month for which exact figures are given, was 89 cents. This, it will be observed, is almost precisely the loss of July, 1920. The deduction to be drawn is that shipping in operation in February, 1921, was in approximately the ratio to the amount of cargo offering as it was in the relatively good times of July, 1921. The question remains as to whether that loss may be reduced still further; in other words, whether tonnage continues to be too great for the freight available. But few would deny that the old board was operating far too many vessels, although General Dawes dwells upon the fact that the drop in rates and cargo in October, 1920, caught the government with "a maximum number of ships operating." That is true enough, yet unmistakable signs of a coming storm were apparent as early as June. All in all, the new board, in comparison, has succeeded admirably well, even if, as General Dawes points out, "overhead cannot be proportionately reduced as fewer ships are operated."

A careful study of that portion of General Dawes' report which deals with the Shipping Board will be found worthwhile.

## "Enforceability" Is Indispensable

QUITE as important as the act that will be passed by Congress for the aid of the United States merchant marine is the manner of its enforcement; or, to put substantially the same thing in other words, "enforceability" is an indispensable attribute. The best intentions on the part of Congress and nation-wide support given to the merchant marine will avail little or nothing if the law be carelessly drawn.

A striking case in point is the Merchant Marine Act of 1920. After its passage a veritable roar of applause was heard from all seaboards of the United States. But within a few months men began to look at one another somewhat dubiously. Some sections, those that promised the most, remained unenforced; at least two of them remain quiescent to this day, and prospects of their being put into effect are either remote or negligible.

One was Section 34, which "authorized and directed" the President to abrogate certain treaties that restricted the right of the United States to impose discriminatory tariffs. President Wilson was criticised bitterly for his inaction; yet President Harding likewise has done nothing. When two executives so dissimilar in all things as they take identically the same course, the only logical conclusion is that they are right and the law is wrong.

The second was Section 28. It would forbid railroads to grant preferential rates to goods imported or exported in foreign bottoms. Inasmuch as sufficient American tonnage might not be available, however, the Shipping Board was empowered to bring about suspension of the section by certifying to the Interstate Commerce Commission that "adequate" services under the United States flag did not exist. After two years Section 28 remains unenforced, doubtless to the delight of chambers of commerce of the Pacific Coast of the United States, which were almost unanimously opposed to it. But who would deny that the Shipping Board had and has power to provide "adequate" American tonnage in trade upon trade; indeed, who would assert that practically every trans-Pacific service would have sufficient American vessels to handle all cargo if the board had not withdrawn ship after ship? Has the board been loath to make Section 28 effective? Such would appear to be the case, even though hearings are being held, which, the board is careful to state, are solely to determine the "adequacy" of existing services. But evidence on the advisability of enforcement will be received if introduced. Yet no committee to hear thousands of conflicting statements is needed to decide whether there are sufficient American vessels to carry our imports and exports; the district managers of the board are fully competent to answer and to say what additional tonnage may be necessary. Perhaps Section 28 should not be enforced, but the board has no right whatever to pass upon that question.

Such things as these must be avoided in the new act. Let us have a carefully drawn law. Let it be enforced. A maxim of the United States Army might be followed with profit. It runs substantially thus: In any emergency it is better to adopt a reasonable plan and to adhere to it than to waste time seeking for an ideal solution.

## "Horse Sense" Desirable

FROM one side of the Pacific to the other, there is hardly a port that is not buzzing with conjecture regarding the plans of German shipping to find its old place in the sun. The Pacific Coast of the United States recently was treated to a rare flow of rumors, none verified as yet; now comes Australia with the most interesting of all. Repeated statements have been made in Sydney to the effect that, although trade with Germany would not be resumed before August 1 at the earliest, German merchantmen were lying in wait in Javanese ports with goods designed for the flooding of Australian markets. The story, however often repeated, appears absurd; but it has served to bring out a good deal of protest against the purchase of German goods.

Well and good. If Australia does not wish to purchase German goods Australia need not. Everyone will recognize the truth of that statement. But, again, Australia must forego sales to Germany. That assertion is no less true than the former, even though it be given little attention. What a world we live in! The Allies insist on payments of reparations, but damn German commodities; the United States must have its billions repaid by Europe, and forthwith erects a tariff wall that makes payment impossible. We need a trifle of what our parents called "horse sense."

## The Fleet Corporation's Status

BY a vote of six to three the Supreme Court has decided that the Emergency Fleet Corporation does not possess sovereign immunity from suit and that action against it may be brought in Federal or state courts without its consent. In its immediate effect the decision permits claimants to sue in other than the court of claims; in a broader sense, the Supreme Court has asserted that when the government enters what always has been regarded as "private business" it exposes itself to precisely the perils to which any non-official individual or company is exposed. In this sense the decision is a victory for the school (which has millions of adherents) that opposes an indefinite extension of governmental activities and power.

But, as William Marshall Bullitt, special counsel of the Shipping Board, points out, a vexed question remains undecided as to whether the Fleet Corporation is suable for all its acts. "Indeed, there is good reason to believe that the opinion means that while the Fleet Corporation may be suable, yet it might be a good defense to show that what it did was done as the agent of the President," said he. Few persons, upon reflection, would be inclined to dissent from Mr. Bullitt's belief, for it would be manifestly unreasonable to hold the corporation for such acts as the commandeering of vessels when similar acts on the part of the Navy Department, for example, could be made the subject of action nowhere else than in the court of claims. Yet one might hazard the belief that most of the acts of the corporation lie definitely on one side or the other of the twilight domain, and that, therefore, the question as to where successful claimants will find money for their satisfaction is a good deal more important, "inasmuch as Congress has taken all the property of the Fleet Corporation" and it "has no assets of its own with which to pay debts." Perhaps, in view of all these factors, the majority decision may be the better law, but the minority decision, which recited various practical objections, may prove to be the better common sense.

## Regarding Refrigerator Vessels

WHILE shipowners and shipbuilders are dwelling at length upon the shortage of passenger vessels, a marked need of another type of steamship is receiving little attention. The oversight is all the more remarkable because an almost unlimited business offers in all parts of the world. The trade in question is in fresh fruits, and the craft needed are refrigerator steamers.

Attention is attracted to the opportunities open by interesting developments of recent months. Early in 1921 two shipments of Chilean fruit were sent to New York. The first sold well; the second did not, apparently because of careless packing. Moved by this failure, the Chilean government made a careful investigation of the New York market, and a third shipment was dispatched in February, when, it should be observed, orchards of the southern hemisphere are basking in midsummer.

Late in March the Commonwealth Line steamship Moreton Bay arrived in London from Australia with 25,000 cases of apples and experimental shipments of other fresh fruits. The apple trade is not new, although it might be developed greatly; shipments of such fruits as grapes, plums, peaches, however, are in the nature of experiments. Yet London reports that the fruit arrived in good condition and anticipates a marked increase in the trade, especially as the goods are received in the English market when British orchards are in blossom.

Australian exporters are situated more fortunately than those of Chile, for the Commonwealth Line has provided about 300 cubic feet of refrigerator space in each of five steamers, and makes no charge for freight if shipments do not arrive in good condition. Chile, on the other hand, is decidedly in need of refrigerator steamers. So are other parts of the world. The shipowner who seizes the opportunity will have cause later to count himself fortunate.

## No Monopoly Desired

NO great shrewdness is required to see in the introduction of an amendment to the shipping act declaring against monopoly in shipping a direct blow at Mr. Lasker's plan of two great corporations to take over the Shipping Board's passenger vessels. The plan was first broached on the Pacific, where Herbert Fleishhacker, a prominent San Francisco banker, made public Mr. Lasker's suggestion and called a meeting of representatives of chambers of commerce of cities of the Pacific Coast. At that meeting and thereafter spirited opposition to the scheme developed on the part of other Pacific ports, especially Portland and Seattle, the latter of which recently brought forward a proposal for the organization of its own syndicate.

Although tentative formation of a Pacific group was to be followed by like action on the Atlantic, apparently nothing has been done. Perhaps the unfavorable reception accorded the Fleishhacker proposals on the Pacific retarded the general plan. The amendment to the shipping act indicates that opposition is widespread and probably of sufficient weight to defeat the idea for once and all.

## What of Lumber?

DURING the evil days of 1921, lumber was both a blessing and a curse to trans-Pacific shipping—a blessing because it furnished the bulk of cargo moving to the Orient and a curse because it attracted idle tonnage from all parts of the world and so led to rate-cutting and eventually to war. Most of the woes of trans-Pacific operators may be traced directly or indirectly to lumber, and their troubles are by no means ended. Due to the decline in demand in the Far East, says Vice-President Love of the Emergency Fleet Corporation, a large number of Japanese steamers formerly engaged in the lumber trade have been thrown upon the market. These vessels, desperate for cargo, are sufficient to unsettle even the most stable situation.

Nor are conditions likely to improve until a large portion of that tonnage has been withdrawn. It is well to remember that, while Japan's imports of lumber during 1921 broke all records, being valued at yen 40,000,000 as against yen 20,000,000 in 1920 and yen 9,000,000 in 1919, the prospects for 1922 are not at all promising. Imports of this year probably will not exceed yen 20,000,000 in value. Although the year opened favorably, there have been some severe business reverses, which will tend to hold down imports; the market, moreover, may be overstocked to some degree, and there have been few or no destructive fires during the last few months. Nevertheless, Japan's recently-adopted policy of conservation will assure the United States of a market for many years to come, probably, indeed, until North American forests go the way of all trees, and Africa or South America or Central Asia begin to supply the world.

This market, therefore, in a limited meaning of the word, is permanent. But that is not equivalent to saying that it is subject to endless exploitation. What is needed in lumber-exporting and in the fixing of lumber rates is conservatism and a high degree of co-operation between exporter and shipowner. Enormous and unjustified sales made this year must be deducted from next year's potential exports. American automobile manufacturers learned their lesson in 1920 and 1921, when the docks of many an Oriental port were crowded with machines for which no buyer appeared. Other industries may profit by the bitter experience of motor companies.

## The Cry of "Wolf"

IT appears that Chairman Lasker of the Shipping Board has had the better of his altercation with Stiles E. Dodge. Mr. Dodge, a traveling auditor of the board, said to newspaper men that money was being wasted in settlements with contractors. To this Mr. Lasker replied in language that, although not precisely of the deep-sea variety, showed that a constant breathing of a salt-water atmosphere does tend to make one's vocabulary more vivid and forcible. Not content with speaking in general terms, Mr. Lasker said that, up to April 24, the present Shipping Board had authorized the settlement of 286 claims for amounts aggregating $19,919,660.54; the cash awards allowed were $2,150,000, but the board made counter claims, with the net result that the treasury will be called upon to pay only $450,000. Unless Mr. Dodge or another should marshal a convincing array of figures in reply, Mr. Lasker's statement must be accepted as disproving the vague charges of the traveling auditor.

But other issues are involved. Statements issued by the board assert that Mr. Lasker made repeated attempts to get in touch with Mr. Dodge, but failed; the auditor ignored a summons of the claims commission to appear in the Standifer hearing, and thereupon was dismissed from the board's service. Mr. Lasker accused Mr. Dodge of insubordination, of which he certainly was guilty; yet if the auditor had had anything of importance to disclose such a technical infringement of discipline could have been forgiven. But he did not avail himself of opportunities extended, and thereby created grave doubt as to his good faith. To make accusations is easy; to prove them more difficult, as Mr. Dodge doubtless has discovered. Yet the situation is not one to cause him grave concern. He has set in motion a story that will be welcomed gladly by all rumor-mongers, that will be repeated and spread in myriad forms, that cannot possibly be stopped. Practically speaking, he has succeeded almost as well as he would have done had his charge been true.

Even in the hurly-burly of things the code of honorable men demands that no one shall cry "wolf" without excellent reason; that once having uttered the word, he shall spare no effort to bring in the carcass. Until Mr. Dodge sees fit to disclose facts as opposed to surmise, figures as against prejudiced report, he rests under a cloud.

## Trans-Pacific Cables

TRANS-PACIFIC communication continues in an unfortunate situation. Despite the excellent service offered by the Radio Corporation of America in conjunction with the Japanese system; despite the extensive use of the naval stations for the transmission of news dispatches, the submarine cable remains an indispensable agency both for government telegrams and private messages requiring strict secrecy. But the single cable in existence between San Francisco and Guam is inadequate and is subject to frequent interruptions west of Midway. For years, therefore, it has been recognized both in North America and Asia that a new cable was needed urgently; yet to this day the net tangible result of all discussion has been precisely nothing.

Beneath the surface there is rivalry, if not a struggle, between American interests and a powerful Japanese group headed by Kakichi Uchida. Mr. Uchida broached his plan for a cable in 1919, yet after three years he continues to mark time pending the decision of Washington as to American participation. That a Japanese-American line would meet with considerable opposition because of the Yap controversy is evident; perhaps the United States would be foolish to make itself altogether dependent upon Japan for communication with the mainland of Asia; in other words, it may be that the ideal solution from the American standpoint would be to base a new cable on Honolulu and Manila and not on Ogasawarajima and Tokyo; but the fact remains that the commercial relations of Japan and the United States are of great importance and demand better cable facilities. Some definite action should be taken immediately. If two cables are required let two cables be laid.

## A Deserved Promotion

THE many friends of Joseph E. Sheedy on the Pacific Coast, in the mid-Pacific, on the Atlantic and in Europe will be pleased that he has been recalled from London, where he served as European manager of the Shipping Board, to take charge of operations at Washington during the illness of A. J. Frey. Mr. Sheedy has accomplished much in London, not the least noteworthy features being a reduction of 50 per cent in salaries of European employes and the supplanting of many foreigners with Americans, so that 98 per cent of all employes now are citizens of the United States.

Mr. Sheedy's wide and varied experience in navigation, shipping and shipbuilding are such as to fit him exceptionally well to take Mr. Frey's place. Should the latter unfortunately be unable to resume his work the board might seek for a long time before finding a better man for the vacancy than Mr. Sheedy.

## Ill News From The East

IN spite of the fact that Japanese specie holdings abroad, which date from the war-time embargoes by Occidental nations on exportation of gold, decreased by yen 225,000,000 from August 31, 1921, to March 31, convertible notes issued by the Bank of Japan, based on government deposits, increased by yen 75,292,000. The reduction in specie holdings abroad, it should be explained, was due to the "unfavorable" balance of trade, as Japanese imports exceeded exports. Hand in hand with these figures go a statement by the Kobe Chamber of Commerce that at the end of March goods in warehouses of that city was valued at yen 135,078,783, an increase of yen 8,747,877 as compared with February, and of yen 15,957,182 as compared with March, 1921.

It is evident that the rehabilitation of Japanese economic life has a long way to go: increasing stocks of unabsorbed commodities on the one hand, continued inflation of currency on the other. If Japan were consuming its imports and were reducing its gold holdings abroad, which have been blamed for currency inflation at home, a return to normality would be in evidence. But now the prospects are by no means encouraging. American exporters would do well to study the situation carefully.

## Mr. Jenkins Needs Disciplining

IN directing that the loading of the steamship West Keats, which already had most of her cargo aboard, be completed by union longshoremen at Portland, Oregon, J. C. Jenkins, an investigator sent to that city by the Shipping Board to inquire into the waterfront strike, has done something that affronts the public. Most men believe that the government should hold itself aloof from labor controversies except as mediator and for the protection of life and property; beyond that the legitimate functions of government do not go. Mr. Jenkins has given aid and comfort to one side, after Chairman Lasker of the Shipping Board had stated that neutrality would be maintained in the employers' fight for the open shop. That Mr. Jenkins' assistance was given to the strikers has nothing to do with the principle involved; he would have been as open to severe criticism had he gone to the relief of the employers. His action calls for immediate disciplining by his superiors.

## The Hanify-Christenson Tragedy

IT is seldom indeed that a seemingly minor mishap takes the lives of two such men as John R. Hanify and Edward A. Christenson, San Francisco shipowners and lumbermen, who were drowned when their yacht was wrecked in San Francisco Bay May 6. With them died a third man, Captain Peter Andersen, sailing master of the yacht. The disaster, a tragic end to a cruise in which a half-dozen craft participated, was felt keenly in every port of the Pacific Coast of the United States and Canada.

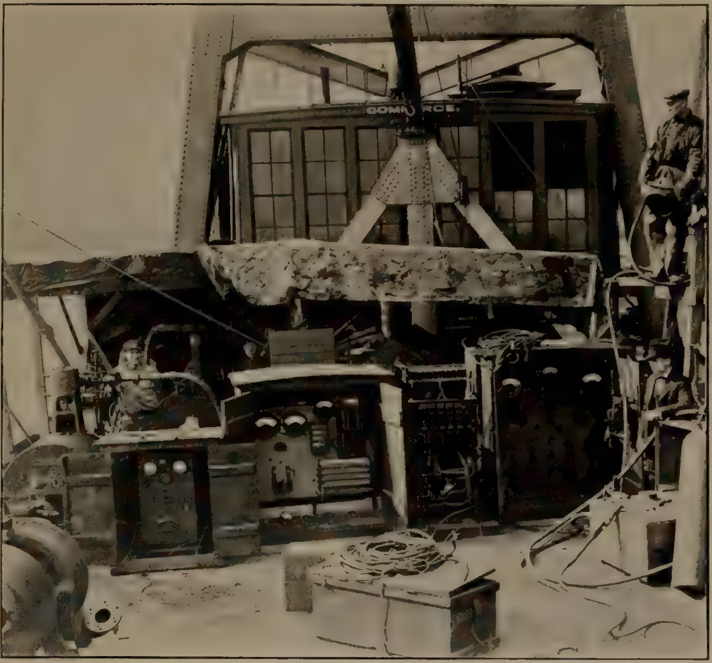
Both men literally rose from the ranks. Mr. Hanify entered the business world as an office boy of a lumber firm; within seventeen years he had become general manager. In 1893 he entered business on his own account and in 1907 incorporated his interests under the name of the J. R. Hanify Company, of which he was president. Mr. Christenson likewise started on a low rung, as bookkeeper of a lumber firm; he also founded his own company, having as his partner Charles E. Sudden, and at his death was president of the well-known firm of Sudden & Christenson, which was prominent in both lumber and shipping. Mr. Christenson will be remembered by many as the man who purchased the sunken steamship Walkure at Papeete, dispatched Captain Leb Curtis to that port with salvage equipment and eventually sent the vessel into San Francisco under her own steam after an exceedingly spectacular bit of work. If rumor be correct, Mr. Christenson supplied Peter B. Kyne, the well-known writer, with much material for his successful Cappy Ricks stories.

# THE UNDERWATER TORCH MAKES GOOD

## Temperature of 6000 Degrees Fahrenheit Enables Diver to Cut Metals at Any Depth to Which He Can Descend

IN the raising of sunken ships, in the salvage and repair of vessels generally, and in many other underwater tasks, the submarine metal-cutting torch henceforth will play a more or less conspicuous part. In short, this subaqueous tool will do in various directions much that the oxyacetylene torch does in numerous activities above water.

A satisfactory submarine metal burner or cutter has been desired for a good while, but not until quite recently have the technical difficulties associated with the development and the service of such an instrument been conclusively mastered. It is of record that the Germans, twelve or fifteen years ago, tried to model the ordinary oxyacetylene torch so that it would function under water, but after a good deal of experimenting they decided that it was not feasible to produce a really practical apparatus. In a measure they failed because acetylene becomes explosive in its action and will not burn steadily when at a pressure approaching 30 pounds. Any gas used for a submarine torch must be discharged at the burner at a considerably higher pressure than that of the hydrostatic head, for otherwise it is incapable of creating in the water the gaseous cavity within which a flame can be maintained.


Electrical apparatus and gas supply used in connection with submarine torches in cutting out damaged section of Staten Island water main. Tank at right was used for training divers and testing torches. (All photographs of this article from Merritt and Chapman Derrick and Wrecking Company. Reproduction forbidden.)

During the past February submarine torches were employed with noteworthy success in cutting free a 12-foot section of a 36-inch cast-iron water main situated 53 feet below the surface of New York harbor. That particular length of pipe formed part of a 10,000-foot "siphon" extending under The Narrows from the Brooklyn shore to Staten Island; and the unit had been badly fractured by a dredge working in the slip above it close to the Staten Island waterfront. The main is the artery by which water from the Catskill Mountains is delivered finally to the borough of Richmond of New York City.

### First Experiments in 1918

Back in 1918, when the Merritt and Chapman Derrick and Wrecking Company was engaged in righting and refloating the steamship St. Paul, two of that firm's organization, J. W. Kirk and Ralph E. Chapman, devised an experimental submarine torch; and with that tool a number of large drainage holes were cut through bulkheads of submerged compartments for the purpose of facilitating the flow of mud and water to lower levels where pump suctions were installed. Some of these holes were 18 inches in diameter, and work of this sort was done at a maximum depth of about 50 feet. The torch, as then fashioned, utilized oxyacetylene in combination with an electric arc; but the gas proved difficult to control at the deeper points of operations. Nevertheless, at a concluding stage of the same job, 42 wire ropes 1½ inches in diameter were cut loose by means of the submarine torch at a depth of 60-odd feet. These ropes had been secured to 21 large concrete blocks, which formed part of the equipment employed in pulling the St. Paul into a vertical position.

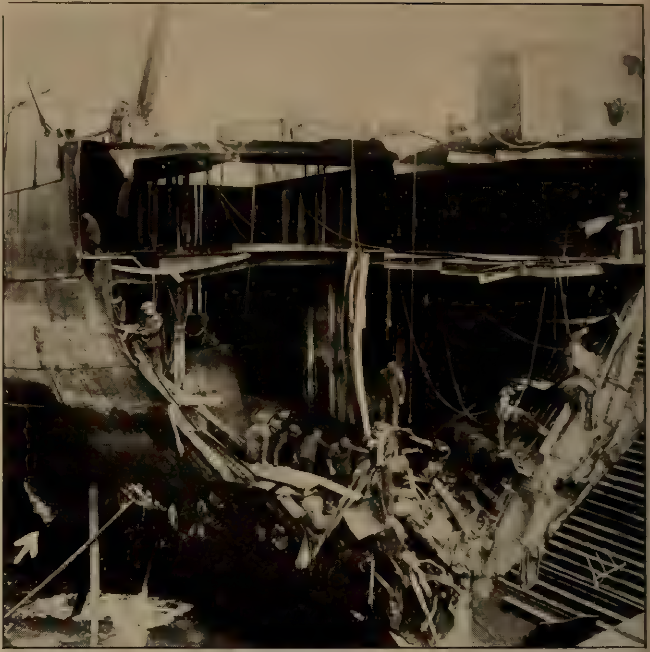
In the case of the U. S. Army transport, America, which sank at her pier, Hoboken, New Jersey, in October of the same year, the Chapman-Kirk torch was utilized effectually in cutting drainage holes and in removing the hinges of some icebox doors. In this connection it is interesting to recall that a 20-inch hole, burned out of a bulkhead to clear a way into the shaft alley, was cut by one diver in the course of a single day at a depth of 61 feet. On the other hand, it took two skilled divers five days to finish a smaller hole by drilling.

### Lord Dufferin Salvage

On the last day of February, 1919, the steamship Aquitania rammed the British freighter Lord Dufferin while the latter was at anchor in New York harbor, and the liner cut off 60-odd feet of the cargo boat's stern. As the stern dropped away and settled to the bottom of the bay it tore loose and bent downward, fourteen feet below the keel of the freighter, four of the lower strakes of plating on the port side of that vessel. Before the Lord Dufferin could be refloated and towed to Brooklyn for drydocking, it was necessary to get rid of that 8-ton pendant mass of plating. That was accom-

Damaged pipe length, Staten Island water main, after removal. Diver is illustrating the manner in which the gas-electric torch is handled under water.

Some cutting was done from within the main, the diver lying prone



The Lord Dufferin after being docked. The white arrow points to the place where an eight-ton mass of bent plating was cut away by the underwater torch.

plished by means of the patented gas-electric, underwater metal-cutting torch.

During December the year gone, the U. S. submarine S-48 sank off Bridgeport, Connecticut, while running a submerged trial. By shifting lead ballast, the imprisoned men managed to raise the boat's bow far enough above water to effect their escape through a torpedo tube. To salvage the craft, however, it was needful to pump out the large compartment containing the electric motors; and to enter that space a way had to be found to open the motor-room hatch, which had been sealed and locked before the S-48 submerged. That hatch lay 70 feet below the surface of Long Island Sound. A hole was made by submarine torches through the center of the heavy cast-steel hatch cover, and with this done the divers were able to release the locking gear and to open the passage into the flooded compartment. It was then a comparatively simple matter to make the other preparations incidental to pumping out the craft.

### Repairs to Water Main

The principal problem confronting the Merritt and Chapman Derrick and Wrecking Company in dealing with the repair of the Staten Island water main was to effect the withdrawal of the damaged pipe length with the least disturbance of the associate units; and it was of vital concern that the restoration of the water service should be accomplished with all possible dispatch. Accordingly, it was decided to cut the fractured section out by submarine torches. Inasmuch

The S. S. St. Paul during the work of righting and floating her. Several large drainage holes were cut through submerged bulkheads with the Chapman-Kirk torch as cast iron and not steel had to be severed, it was necessary to do some preliminary testing so as to adapt the torch to the more exacting conditions imposed by the considerably higher melting point or remelting point of cast iron. The desired efficiency was secured by the choice of a suitable cutting gas; but the nature of this medium is not revealed, although Ralph E. Chapman makes it clear that oxy-acetylene was not the gas employed.

Without going into the details of the work on the water main, it will answer for the present purpose to say that the torches were used well-nigh continuously during an interval of nearly nine days, and that the alternating gangs of divers in that time made a series of cuts that represented a total length of more than 30 feet. The metal cut varied in thickness from 1⅝ inches to 3½ inches; and progress was at the rate of from 4 to 6 inches hourly, the speed being influenced by the temperature of the water, the thickness of the pipe walls, and the ease with which the men could get at their work.

### Description of Torch

And now for a brief description of the torch in its perfected form which, it is believed, will be able to deal with any structural metal and can be relied upon at any depth where a diver could operate. The torch tip is a carbon electrode a few inches long and less than an inch in diameter; and the carbon is pierced from end to end by two small tubes through which the cutting gas is discharged. The electrode is connected with a conductor, which reaches to the surface and is housed within the hose that delivers gas to the torch. By means of a suitable valve, the diver can regulate the emission of gas and control the quantity of it in accordance with the conditions imposed at different depths.

Current is not switched on until the diver signals to his attendant at the surface that he has reached his underwater goal. Then, to start cutting, the diver turns on the gas and moves the tip of his torch to within a quarter of an inch of the metal to be fused. At that instant, an arc is formed between the electrode and the "ground," represented by the metal to be cut. At the same time the gas is ignited, and in burning and expanding it generates a vaporous cavity in the water. Within this focus the arc flames at a temperature of about 6000 degrees fahrenheit. The moment the diver retracts his torch the circuit is broken, and arcing ceases.

Although the heat of the arc is counted upon to do most of the melting, still the gas flame assists in this and also serves to blow away or to remove the metal as soon as it becomes soft or fluid. The electrodes are consumed during the cutting, and the service life of one of these carbons is about half an hour. The electric current is of low voltage; and to minimize leakage the electrode and the neighboring portion of the torch are wrapped with insulating material. The divers wear rubber gloves. The tool is light enough to be easily handled under water, and in this respect differs radically from a submarine pneumatic drill or any similar apparatus.

# SAN FRANCISCO'S FERRY PROBLEM

THE situation of San Francisco on the tip of a narrow peninsula surrounded by deep water and the tremendous growth of what is known as the San Francisco Bay section of California present some interesting problems in ferry transportation.

It is the proud boast of San Franciscans that more people pass through the union ferry depot at the foot of Market street than through any terminal in the world with the exception of Charing Cross, London. The ferryboats carrying this passenger traffic are the largest and finest of their kind in the world. In the calendar year 1921 these boats carried a total of 52,122,538 passengers, about 42,000,000 of whom passed from the foot of Market street, San Francisco, to the ferry terminals at the ends of long piers projecting into the east side of the bay on the Oakland and Alameda waterfronts.

Lying directly between the ends of these piers and the foot of Market street and situated about one and one-quarter miles from the latter is Goat Island, or Yerba Buena, as it was more euphoniously named by our Spanish forbears. Since the beginning of the history of the ferry traffic on the bay, the managing owners of that traffic and the passengers on the ferryboats have looked with envious eyes on this island as an ideal terminal site for the eastern end of the ferry service. That this is so is shown by the following interesting announcement made by the San Francisco and Oakland Railroad, which appeared in the Daily Mercantile Gazette and Prices Current, Shipping List and Register, in January 9, 1867.

"The present western terminus of this road begins at the end of a wharf extending 3500 feet from the Oakland encinal into the bay of San Francisco, whence it runs through the town of Oakland to San Antonio (now East Oakland), a distance of five miles. It is the intention of the company to extend this wharf and also their road to the island of Yerba Buena opposite, whence this city will be reached by ferryboats in the space of four minutes, the intervening distance being only about one mile. The daily average of passengers now crossing on this route is estimated at 2500."

From this very laudable ambition the pioneers were thwarted by the opposition of the War Department and of the Navy Department, both of whom refused to allow the blocking of the deep water channel on the east side of the island and both of whom had their own ideas as to the use of the land area on the island for their own purposes. At the present time, however, there seems to be some reason for hope that this opposition will be removed.

The Navy Department has already withdrawn all objections to such a plan and has signified to the War Department its entire willingness to co-operate. The War Department and the Department of Commerce will hold a joint hearing in San Francisco in the near future. The Federal administration is apparently favorable to the plan, and the Secretary of Commerce, being personally familiar with the practical nature of the proposal and the immense benefits to be gained, will undoubtedly be enthusiastically in favor of it.

# PACIFIC SHIPPING PROSPECTS

## Lines Prepare for Unprecedented Intercoastal Tonnage. Review of All Pacific Trades Shows Upward Trend. Internal Affairs Are Analyzed.

**Steamship operators of the Pacific Coast of the United States are almost unanimous in predicting improvement in business during 1922. Here and there, it is true, conditions are unfavorable. Such is the case with Australia, which does not promise any great volume of trade with America during the season. No great increase in business is predicted, with the single exception of the United States intercoastal trade; but in general a steady change for the better is evident. The result of interviews with many shipping men appears in this article.**

An inquiry concerning shipping prospects, conducted among the freight agents of various representative steamship lines of the Pacific Coast of the United States, has elicited much interesting information. Those interviewed uniformly agreed that any forecast of shipping tendencies must, of necessity, be speculative and subject to those changes that result from unusual economic or political developments. The few who volunteered to discuss the fundamental economic and political conditions abroad did not exhibit undue optimism or pessimism, but spoke dispassionately of those elements, which, they declared, "would exert a beneficial or detrimental effect on shipping."

"The improved domestic conditions, now apparent, will accelerate cargo shipments", said one person. "Crops are good, with prospects of a neat surplus in grains and fruits; harvest is only a few weeks distant and although a shortage of certain products is predicted the general total will equal, if not exceed, the record of past years. Our lumber industry is again resuming its seasonable activity, with operating problems so adjusted as to assure a steady, normal production."

"The resumption of building activities," declared another, "has been a great factor in solving the unemployment problem; all sorts of building and construction programs have been commenced, with a resultant demand for materials and a consequent distribution of funds to an army of craftsmen and laborers for the purchase of necessities and semi-luxuries."

### Demand for Manufactured Goods

"For the past year and a half the consumption of manufactured goods has considerably exceeded the production," said a third freight manager. "Stocks in the hands of manufacturers, jobbers and retailers have declined and an enlarged output is necessary for the current and anticipated demand. Iron, steel, paper, lumber, textiles and leather, together with food products, have shown a wonderful increase over the low point of 1921; our banks are strong and credit is available for financing a larger volume of production. Loans for business purposes have lost demand, leaving this money for banking expansion. It is possible that bankers will soon be in a position to listen to those representative concerns that seek money for the expansion and development of our foreign trade.

"I am one of those who refuse to become excited concerning the coal strike. There are too many workers in the industry, many have been working part-time, and although wages have been high, the individual purchasing power of the miners has been small. Coal is practically the only commodity in the country today that has not experienced a reduction in price. This has been principally due to the excessive wages paid in the industry and the time for a 'show-down' is at hand, if only to demonstrate to the country the economic wastefulness of any large quantity of part-time, high-wage labor that might be used in other industries to its full capacity. Our shipping thrives on maximum production and consumption, and from the standpoint of an American ship-operator, anything preventable that interferes with the one or the other is full of dangerous potentialities."

### Production of Foodstuffs Necessary

Practically all sources of information in shipping circles are agreed that improvements in the industry depend largely on the adjustment and coordination of our domestic affairs so as to assure a maximum economic production of amnufactured goods, raw material and foodstuffs, but especially of the last. The greatest percentage of loss in 1921, as compared with 1920, occurred in those countries exporting large quantities of manufactured products. The United Kingdom dropped from $6,494,000,000 to $3,422,000,000; the United States from $8,080,000,000 to $4,379,000,000; Australia, distinctively agricultural, declined only from $676,000,000 to $618,000,000; Brazil from $957,000,000 to $934,000,000; while Italy advanced from $1,505,000,000 to $1,733,000,000. In other words, prime necessities are the basis of permanence in export trade, even as they were the commodities first introduced into foreign trading. With this fact in mind, a healthy communion of interest and interchange of information between the shipper and the farmer would be profitable. The one should know something of the man who produces dependable basic cargoes, and the other ought to have a friendly interest in the fortunes of the man who carries his surplus crops to all ports of the world. In connection with the present subsidy program, it has been suggested that interior farmers and business interests be made familiar with maritime affairs and as a further improvement on the suggestion, it is pointed out by one man, that with Pacific shipments originating today in Michigan, Iowa, Missouri and other inland states traffic men look beyond the watersheds of their ports into the great inland industrial and agricultural districts for portents of particular significance to the shipping business. Although little verse in maritime affairs, "the man with the hoe" is the most important consumer of imports and a principal contributor to our exports.

### Intercoastal Shipping Leads

Intercoastal shipping, during the next few months, will be the bright, shining star of the United States maritime commercial firmament, according to those engaged in that trade. Two lines have added three additional vessels each, another line has added one and the total number of vessels now engaged principally in that trade equals eighty. It is generally agreed that the westbound business will be exceedingly heavy, with steel representing nearly three-fourths of the cargoes, followed by tinplate, drygoods, hardware, shoes, cotton goods and miscellaneous cargo. Conditions, as a whole, are better on the Pacific Coast than in almost any other district and the prediction of a large future demand is based on the known requirements for the building up of depleted stocks.

"Eastbound business invariably increases during the latter half of the year," said one optimistic official. "We expect business to be good and we are preparing for an unusual volume. A large quantity of fruit and canned goods will move from California, while the North expects a healthy increase in lumber, salmon and wool. Eastern and Middle Western buyers were somewhat chary last year of placing orders for more than actual requirements and last season's stocks will have been entirely depleted when the new crop arrives; it is also safe to predict that the buying this year will be on a more liberal basis than before."

Another forecasts a similar activity eastbound with steady improvements in oil and lumber, canned goods and fruit, with seasonal shipments in Northwest fruits. He cites the movement of steel as an example of the favorable condition of shipments westbound, although this commodity is not carried in large quantities by his line. Railroads have placed the principal orders for steel; building contractors are second in volume.

### Railroads Admit Defeat

A railroad traffic agent frankly admits the inability of the railroads to compete with the intercoastal lines from the Atlantic seaboard. He believes that the intercoastal service has an unexampled opportunity of developing business with the Atlantic Coast, as nothing save a bad slide at the Panama Canal can interfere with its activities. Competition is and will continue to be keen between lines, and the result expected is several fleets of vessels, each ideally designed for a particular branch of the service.

Eastbound Gulf business did not come up to expectations during 1920 or 1921. A very slight improvement is expected in this direction during the current season, although it must be admitted that the basis of these expectations is about the same as created undue optimism in the past. Unfavorable credit conditions in the South are said to be the barrier to Western goods. Chicago, St. Louis and Kansas City jobbers have always extended a large volume of credit in the Southern district, as have New York distributors, and they hold that business in the hollow of their hand. Until the semi-jobber and retailer of the South is in a position to pay up and buy his goods where he pleases the Pacific-Gulf business will be unsatisfactory. It must be remembered that the products of the Southern states are somewhat similar to those of the Pacific Coast and that Pacific-Gulf lines cannot compete with the railroads in shipments of lumber products to Kansas City and St. Louis. Eastbound shipments will be confined to canned goods, dried fruits, wool and general cargo.

In the westbound trade, steamship lines are unquestionably in command of the Gulf situation. The Mississippi-Warrior barge service ranges over a large territory and the Middle Western railroads securely in possession of profitable short-haul business consistently refuse to come to the assistance of the transcontinental lines in reducing rates on shipments to the Pacific Coast. In consequence, the large volume of tonnage to come to the Pacific Coast during the next few months will be moved by water. The steady demand for soil pipe has been supplemented by the need of municipalities for sewer and drain pipe and this will be the heaviest commodity. Nails from Birmingham will follow closely. An unusually large shipment of canned corn will come from Iowa in October and each boat will have, as a principal part of its cargo, naval stores, glucose, turpentine and resin, with a general cargo of hardware.

### South American Exchange Improves

Improvement is also indicated in the South American-West Coast trade by an official who has given considerable thought to the subject. "Exchange conditions are steadily improving and stocks have been depleted to the point where they must be re-filled. Political controversies are in no immediate prospect and although this business is not expected to show an unusual impetus a steady gain is expected. Lumber, wheat, canned goods, flour, cement and general cargo will constitute the shipments. A flour mill recently erected in Callao, Peru, by American interests is expected to be followed by several others, and although the Pacific Coast must compete with Australian wheat in that territory, business in that commodity during the fall and early winter will be good."

Principal commodities from the West Coast that are expected to move in increased quantity are coffee, fertilizers, hides, linseed oil, sunflower seed and cocoa beans.

It is natural that the chief business of the East Coast of South America is with the Atlantic Coast, but there are evidences of a slight improvement in the southbound movement of lumber, canned goods, dried fruits and agricultural implements, with some rice in prospect for Porto Rico. Lumber will move chiefly to the River Plate district and the movement of canned goods and dried fruit will not be remarkable, accoring to one authority.

### Cuba is More Stable

A prophecy of increased stability in Cuban finances is made by one steamship agent. "The enormous supply of merchandise on the docks at Cuba, which at one time was the scandal of the maritime world, has gradually been disposed of in one way or another, and it is expected that an increased demand will soon be in prospect for the typical products of the Pacific Coast. American banking interests have assumed control of the finances of the republic and are endeavoring to establish a stable working arrangement with the government. If that is accomplished, Cuba can be depended on to come within the regular, dependable class as a consumer of Pacific Coast merchandise, but from a return cargo standpoint Cuba does not exist."

Lumber will continue to be the heavy commodity in the Australian trade, supplemented by oils and canned goods. Steel products will continue to be sent from the East and a large volume of the automobiles from Detroit will be carried via Canadian lines.

Spectacular increases in business southbound are not generally expected, while tariff provisions have killed the business northbound in hemp, wool and frozen meats. As indicated, however, there will be a steady movement of lumber in the southern direction and domestic conditions in both Australia and New Zealand are such as to make prospects favorable.

In Java and Saigon foreign exchange has risen remarkably, and were it not for the fact that Java was the last to feel the general depression and thus, from one method of reasoning, would be expected to be the last to recover, brighter predictions would be in order. However, a steady increase is generally predicted in the southbound trade, while the usual amount of spices, etc., will move to the Pacific Coast, with rubber to the Atlantic Coast, for distribution to the large rubber plants of the Middle West.

### Two Views of Japan

Internal financial affairs in Japan are cited by some as being indicative of danger to the future prospects of business with that country. It is pointed out that although Japan has undergone several sporadic readjustments the remedies applied were of the patent character and merely relieved the ills of the patient, without, however, getting at the real trouble. One competent gentleman insists that the financial and banking systems in Japan are in a unstable condition and that the business interests of that country and the government must write the meaningless figures now on their books into another volume, made of parchment, before the business interests of the Western world will have faith in any permanency of business in the Flowery Kingdom.

The other story is: "The banking and financial interests of Japan have for some time been working out their reconstruction problems and today have the situation well in hand, or in as good condition as is possible under present conditions. The financiers of Japan are in a better position to judge the character of risks and the possibilities of rehabilitation than people of the Western world. The gambling spirit ascribed to the sons of Nippon is in reality a native shrewdness, which in the long run will prove its basic soundness."

With financial conditions in Japan again serene, a steadily increasing business is expected to develop in all lines, with a variance of opinion on the permanence of lumber orders. The lumber fleet of the North has been busily engaged in that traffic, and it is generally admitted that lumber was the salvation of shipping last season. One source of information insists that Japan is overstocked and that shipments may decline at any time; others are equally emphatic in declaring that the present bookings will keep the lumber fleet engaged until October 1; others believe that the trade is, to a great extent, permanent and will continue actively up to January 1, at least. Steel to both China and Japan will continue to move direct from the Atlantic Coast and there is no likelihood that the Pacific Coast, in the immediate future, will participate in this business.

Fear is expressed that strife in China may reach such proportions as to become inimical to shipping, although no serious interference has yet been experienced, and there are those who discount the danger as being of remote possibility. Military operations are said to be confined to districts that are not directly concerned with imports and exports.

### Eastbound Trans-Pacific Outlook Good

Eastbound trans-Pacific traffic is generally viewed optimistically. All Hawaiian sugar will this year be delivered to San Francisco; silk will continue to be moved from the Pacific Coast to Eastern points on account of the great value of the product, which causes buyers to insist that silk shipments be rushed across the continent at express train speed. Gunnies, hides, wool from Japan, vegetable oils, rice, rattan furniture and children's novelties will contribute to making up the volume of eastbound business and an increase is expected. Outward cargoes will consist chiefly of lumber, canned goods, dried fruits, oils, copper, lead and spelter, rice, malt and sugar. If Washington places the Philippines under the coastwise laws, as is predicted, American flag vessels would then receive the greatest impetus of all, but without artificial aids the trend is upward, with the qualifications cited.

European affairs are alive with elements that will affect shipping, favorably or unfavorably. There is a slight glimmer of hope in the thought that the demand for lumber may resume and in the prospect of delivering to the continent a considerable portion of the wheat and barley crop. One freight executive predicts an improved movement in these commodities, as well as a good delivery of canned goods and dried fruits. He is obscured, however, by two equally earnest brother executives who see ominous clouds on the European horizon. One frankly predicts a war within the next three years and declares that the failure of the Genoa conference to agree upon an equitable and adequate financial program will reduce credits and consequently shipping. He is supported in this theory by another who predicts unsatisfactory conditions on the continent for at least the next year and emphasizes that half of Europe is already hopeless from a shipping standpoint, while France and England are inaugurating every economy in order to reduce importations. A common economy is the milling of grain, by a new process, which secures from 85 to 90 per cent extraction of flour as against 72 to 76 per cent under the old process.

### Improvement Is Certain

With a steady progress in reconstruction admitted as a possibility, Europe this year will be compelled to use large quantities of American grain and canned goods. Agricultural conditions in Europe have not yet reached a normal stage and the masses must be fed. Exports from Europe are expected to be very light and of a miscellaneous character.

A composite view of shipping prospects, for the next few months, will permit the most conservative investigator to predict an improvement. Conditions will not allow unrestained optimism, but shipping men are not merely hopeful; they appear to be convinced that the period of uncertainty has been weathered and that, although a long stretch of hard pulling is ahead, they are bound for a short time at least into charted waters. To look beyond would be idle speculation. The present outlook is heartening.

# SHANGHAI HARBOR IMPROVEMENTS

## A Summary of the Report of the International Commission. Immediate Work Would Cost 10,750,000 Shanghai Taels

DURING recent years the port of Shanghai has grown to be one of the most important in Asia, and many students of world development have come to the conclusion that this port may, if properly handled, become the greatest in the world. The importance of Shanghai comes from its geographical situation and depends upon its service as a commercial gateway to the great alluvial plain of central China and the entire watershed of the Yangtze river. Its situation on the Whangpoo is protected against any serious danger from typhoons and at the same time gives it an admirable connection, both by rail and by the great network of canals, to the whole of the delta of the Yangtze. The watershed of this river covers 750,000 square miles and supports a population of 180,000,000, the whole of this vast territory being dependent upon Shanghai as a distributing port.

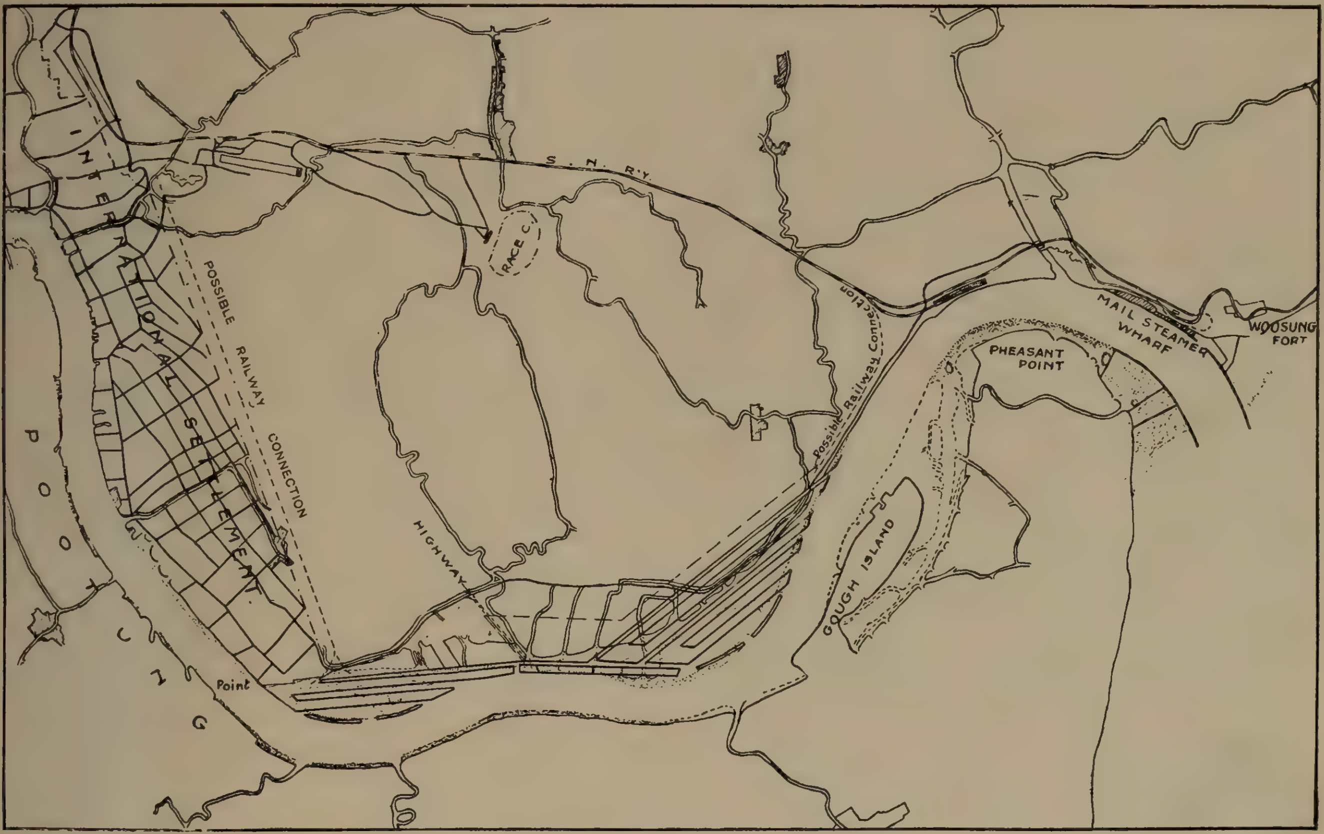
### Value of Trade

In 1920 the gross trade of Shanghai had reached a value of Hongkong taels 840,000,000. During the period from 1900 to 1913 this trade had increased at the rate of Hongkong taels 20,000,000 a year. It is estimated that the increase in bulk of cargo and tonnage entering the port will be over 33 per cent in the next ten years. There has been some difficulty recently in accommodating the facilities of the port to the size and draft of modern wharf steamers.

The port is managed by an international board known as the Whangpoo conservancy board. From time to time since 1916 this board has had under consideration various schemes for improving the navigable channel of the Whangpoo and the approaches to the mouth of the Whangpoo through the mouth of the Yangtze. In November, 1921, an international committee of consulting engineers who had been studying the improvement and development of Shanghai's harbor submitted a comprehensive report, with definite recommendations and plans for development along the lines of present trends in world commerce. This report is summarized here.

The work of the present committee was to consider in detail all of the projects that have been formerly brought up in the work of the conservancy board and any other schemes that in their judgment were worthy of consideration. It may therefore be taken for granted that in presenting this report the committee has not overlooked any serious possibilities for the solution of the problems facing Shanghai harbor. Their report does not in detail go into any of the schemes that have been advanced, but confines itself to certain practical and definite recommendations, which if followed out will "overcome all the deficiencies under which Shanghai now labors at a cost not incommensurate with the benefits to be obtained."

In considering draft of ships the committee reached the conclusion that in a few years it will be necessary to provide for a draft of 33 feet at neap high tide. In the Yangtze estuary the south channel was chosen as lending itself most readily to improvement, and it is recommended that this channel be deepened through dredging only, by making and maintaining a channel "through the Fairy flats, developing it gradually foot by foot," so as to provide as soon as practicable a channel 600 feet wide at the bottom and with a depth



Plan of the Whangpoo

of 37 feet at neap high water. This would mean a deepening of the bottom by 9 feet on the crest from the present condition on these flats. For this purpose it is recommended that two dredges of the most powerful type be acquired, which would be capable of operating on the Fairy flats in a depth not exceeding 18 feet.

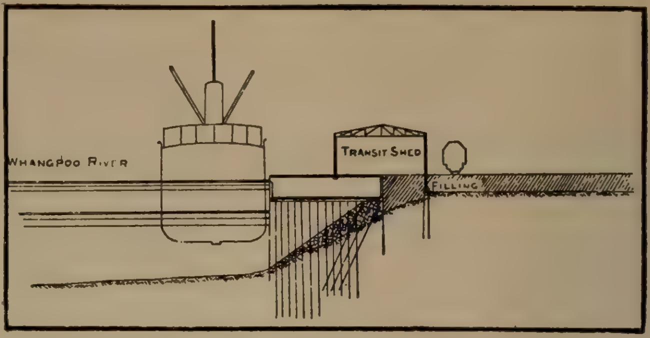
### Harbor Works Recommended

In considering the harbor itself the committee recommends that public quays and moorings be provided, and that in the Whangpoo river on the same side as the international settlement commercial docks of the open type, equipped for both rail and canal boat connections, be built as near the city as practicable; that mail steamer accommodation be arranged on the same bank of the river near the mouth; existing foreshore areas and conservancy land to be utilized for these purposes, and adjacent land to be acquired for future development.

For immediate needs in the harbor the committee recommends that the present general work program of the engineer-in-chief of the Whangpoo conservancy board be carried out, with certain reservations and additions. The committee is of the opinion that dredging only should be employed in deepening the fairway in the Whangpoo to 30 feet low water; that all areas between the old high water lines should be reserved by the board for harbor and industrial purposes; that a 600-foot long wharf for mail and passenger steamers should be constructed near the mouth of the Whangpoo; that berthing 2500 feet long should be provided at riverside wharves, equipped with transit sheds, godowns, canal frontage and rail connections; that the existing river moorings be acquired by the board and more added; that basins be constructed as required for more extensive accommodation of vessels; that all the necessary land for this work be acquired at once; and that all immediate and future work should be planned and administered by the harbor authority.

### Expenditures Necessary

In estimating expenditures for this work, the committee finds that for improvement of approaches (that is, survey, dredging plant and incidental plant) a capital expenditure of Shanghai taels 4,525,000 will be required; and for the harbor work, including plant for the regulation of Whangpoo depth of channel, the commercial wharf and dock for 2500 feet berthing space (together with its sheds, godowns, terminal works, and interest during three years' construction period), the mail steamer wharf, and the purchase of existing moorings, there would be required Shanghai taels 6,225,000, making a total capital cost of Shanghai taels 10,750,000 for the immediately proposed work. It is estimated that the flotation expenses of this scheme would be $270,000—a total capital requirement in funds to be raised by port bonds of $11,020,000.



Mail steamer wharf section

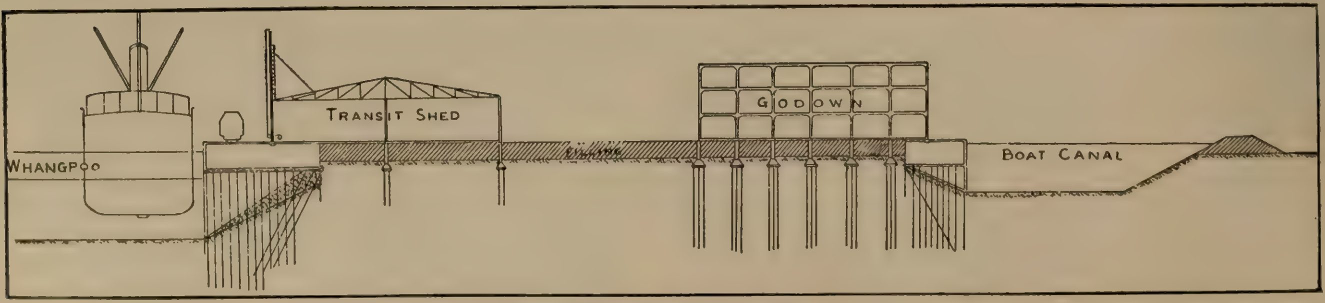
The annual receipts and expenditures, based on 1921 trade figures and the estimated revenue from harbor utilities, show a total revenue of $2,872,500. This revenue should increase from year to year with the increase in value of trade. There will also be possible a large increase from the fact that it is proposed to allow a higher conservancy tax. This is now 6 per cent on the customs duty and it may be increased to 10 per cent. Then too the transshipment tax as figured in this total is only 60 per cent of the amount authorized.

This revenue, figured on a very conservative basis, will take care of all of the annual expenses of the improvements to approach, the estuary of the Yangtze river, the harbor expenses in connection with the improvements outlined, and provide for the interest and sinking fund of the port bonds, with a surplus balance of Shanghai taels 4100.

### New Organization Proposed

The improvements and changes recommended in the committee's report cannot be made "within the scope of the powers now vested in the Whangpoo conservancy board." It is therefore proposed that a board should be constituted in a new scheme for the management of the port. This board would consist of: first, Chinese officials, including local representatives of the customs and railways, these to be appointed by the Chinese government and one of these to be chairman of the board; second, representatives of shipping and trade in Shanghai, elected by local interests; third, a general manager, appointed by the board, who should be ex officio vice-chairman. The Chinese officials would hold office as long as they filled the positions by virtue of which they were appointed. Other provisions are: term of office to be two years; one-half of the first elected members to hold office for one year only, the selection of these members to be determined by the board after election; all members of the board to have equal authority; opinion of the majority to be conclusive; a majority of all the members to be necessary for a quorum.

The general jurisdiction of this board shall extend in the Whangpoo from its mouth to the upper tidal limits, and laterally between the high water lines of ordinary spring tides; within these limits the board to have full control of all operations affecting the "regi-



Commercial wharf and dock section

men or navigability of the river." In the Yangtze approaches the board shall control from Saddle Islands to Plover Point, in everything that concerns the work of "hydrographic survey and the improvement and maintenance of the approach channel." The board shall have jurisdiction over all land areas acquired for harbor purposes, and the harbor shall consist of the Whangpoo river from the upper side of the "entrance of the Yang Shih Chiao creek above Lunghua, down to the mouth of the river" and also of the Woosung anchorage in the Yangtze river.

### Powers and Duties of Board

It is proposed to vest this board with large powers to be delegated by the Chinese government, so that the board would be in no way subordinate to provincial authorities.

The board is charged with the duties of providing a navigable channel of width and depth sufficient for the needs of the port, both in the outer approaches and in the Whangpoo; with the increase and maintenance of harbor accommodations, utilities and improvements; with the operation and administration of the harbor; with the formulation of projects and estimates of costs of work to be undertaken; with the maintenance of existing and future works; with the co-operation at their discretion in the improvement of private harbor facilities; with the preparation of a budget; and with the publishing of a full annual report. The board is vested with authority to perform all of these duties, and to administer the rules and regulations of the harbor, to receive and expend funds for the carrying out of these duties, and to borrow money for the same.

In this connection the board is directed to inaugurate sinking funds to redeem any loans, in periods not exceeding thirty years in the case of works and sixty years in the case of lands. It is empowered also to levy certain taxes at rates to be fixed annually and advertised six months before they come into effect. The taxes include a conservancy tax not to exceed 10 per cent of the gross customs duties, and in the case of duty-free goods not more than one-half of 1 per cent ad valorem; the transshipment tax on cargo not paying customs duties in Shanghai of not more than one-fourth of 1 per cent ad valorem; and tonnage dues of not more than 10 candareens a net registered ton of shipping using the harbor.

The committee in concluding its report points out the necessity of a strong public harbor policy to strengthen the position of Shanghai as a future transshipment and distributing center. A well-organized and experienced body already exists to form the nucleus of an efficient harbor administration. The position of the Chinese government is safeguarded in this proposed scheme of development and administration, and no burden whatever is placed upon the national exchequer.

The committee making this report consists of Major-General W. M. Black, H. von Heidenstam (chairman), F. Palmer, Dr. I. Hiroi, P. G. Hornell, L. Perrier and P. Ott de Vries.

# THE CASE OF THE PRIVATE OWNER

By WILLIAM A. THOMPSON, JR.*

THE American Steamship Owners' Association, but more particularly the members of the association who carry their own products in their own vessels, requested me to present briefly to your committee some of the reasons why, in their opinion, the so-called private owner is entitled to full consideration if and when a ship subsidy is granted to American owners. Inasmuch as the great majority of the vessels employed in the carriage of cargo where there is common ownership of cargo and vessel are tank steamers, I am going to speak more particularly of the tanker situation.

### American Tanker Tonnage

The American privately-owned steel tank steamer tonnage as of November 1, 1921, aggregated 2,705,280 deadweight tons and represented approximately 40 per cent of the total privately-owned tonnage in the American merchant marine. Of this tanker tonnage approximately 94 per cent is owned by the shippers of the cargoes transported therein, and 98 per cent of the total privately-owned tanker tonnage is normally engaged in the transportation of petroleum and its products in bulk, the balance being used for the transportation of other liquid cargoes, such as molasses, tar, vegetable oils, etc.

A tank steamer, being especially designed for the transportation of liquid cargo in bulk, is restricted in its employment. For this reason it invariably follows that tank steamers must be operated with a one-way load; that is, after discharge returning in ballast to loading port, as rarely are there suitable cargoes to be transported in both directions. Even if such cargoes are available, the character of same would in most instances require delay to clean the vessel, which would make the cost prohibitive. A one-way load, therefore, is a condition which the tank steamer owners must bear in order to operate. This makes the assurance of full cargoes in the one direction essential, and accounts for the common ownership of the tank steamers and the cargoes.

Transportation is of vital importance in the marketing of any commodity, and particularly in the petroleum industry, because it constitutes one of the largest single items of cost. For this reason it is impossible to market American products abroad in competition with combined foreign interests, some of whom are assisted by their respective governments, unless the American oil industry enjoys as low rates of transportation as its competitors. If such freight costs cannot be obtained by the operation of tank steamers under the American flag, there is no choice but to use the vessels of other flags. In this respect the oil industry is in no different position than any other American export business.

### World Tanker Tonnage

The present world tank steamers afloat and under construction are 1003 in number, aggregating 8,204,292 deadweight tons which are divided: 428 American of 3,880,756 deadweight tons; 575 foreign of 4,323,536 deadweight tons. The estimated normal world requirements for tanker tonnage are 6,187,678 deadweight tons, from which it may be observed that the combined tonnage afloat and under construction is 2,016,614 deadweight tons in excess of that requirement. At the present time there are about 74 foreign tank steamers of 446,882 deadweight tons and 93 American tank steamers, aggregating 717,027 deadweight tons, tied up. Of the latter over half a million deadweight tons is Shipping Board tonnage, the balance being privately-owned.

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* Statement of William A. Thompson, Jr., president of the Texas Steamship Company and vice-president of the Texas Company, a member of the committee of the American Steamship Owners' Association, at Congressional hearings on new shipping bill, Washington, April 28, 1922.

This preponderance of tonnage over present and normal requirements has contributed to the enormous deflation in values of tank steamers and has accentuated the severe competition which normally exists in the foreign trade.

### Disadvantages of American Owner

In view of the exhaustive research made and the expert witnesses who have already appeared before you, it would seem unnecessary to offer further statistics in support of the disadvantages of the American owner. However, it does seem desirable, at the risk of repetition, to point out that the tank steamer owner is under the disadvantages common to all American owners in meeting foreign competition in the effect of high capital investment upon depreciation, insurance and interest, and higher cost of wages, repairs and subsistence.

Capital investment affects gross operating costs through the fixed charges of depreciation, insurance and interest. The allowance for depreciation due to exhaustion, wear and tear and obsolescence is between 5 and 6 per cent per annum. Again, the conservative valuation for insurance purposes is the capital investment, and where concerns are working on borrowed capital, interest charges accrue.

So far as the effect of capital investment on future construction is concerned, with the present preponderance of tanker tonnage over requirements it is not reasonable to expect that there will be any new tanker construction for some time to come, but when that time does come, it would appear that the tank steamer owners should enjoy any governmental assistance which may be accorded other American owners to overcome the 20 per cent higher cost of construction in American than in British yards.

### Wages on United States Vessels

All American tank steamer owners are paying not less than the wage scale adopted by the American Steamship Owners' Association, which brings the cost of wages considerably above that of the British scale, without considering bonuses paid by some American companies for efficiency and length of service.

To indicate the importance of American shipping in affording employment to citizens of the United States, it might be cited that the American tank steamer owners employ over 10,000 men on the vessels of their fleets.

The cost of repairs in American yards is approximately 20 per cent over that in British yards.

While the British cost of subsistence may, on some items, be slightly lower than the American, the real reason why the aggregate cost to the American vessel is higher is because the standard of living aboard the American vessel is better than aboard the British vessel.

The only American owners who can successfully operate tank steamer tonnage are those who can be assured of full loadings, which result can best be obtained through common ownership of the tank steamer and cargo. Consequently to exclude that class of tanker owners from the benefit of governmental assistance would have the practical effect of excluding all American tank steamer owners, and would result in their having to resort to foreign bottoms for tank steamer transportation, as was the case prior to 1914.

### Emergency Use of Tankers

Not alone are tank steamers indispensable for the transportation of fuel oil to supply oil-burning merchant vessels, but in times of national emergency are essential as auxiliaries in supplying the land, sea, and air forces and essential industries. At time of emergency the mere existence of tanker tonnage is not sufficient, but in addition, that tonnage must be in condition for immediate operation with adequate trained personnel to man same.

What I have stated with respect to tank steamers applies likewise to the cargo steamers under "common ownership," and such steamers are entitled to all of the benefits accruing to American owned vessels. If discriminated against, they, too, will be superseded by steamers of other flags.

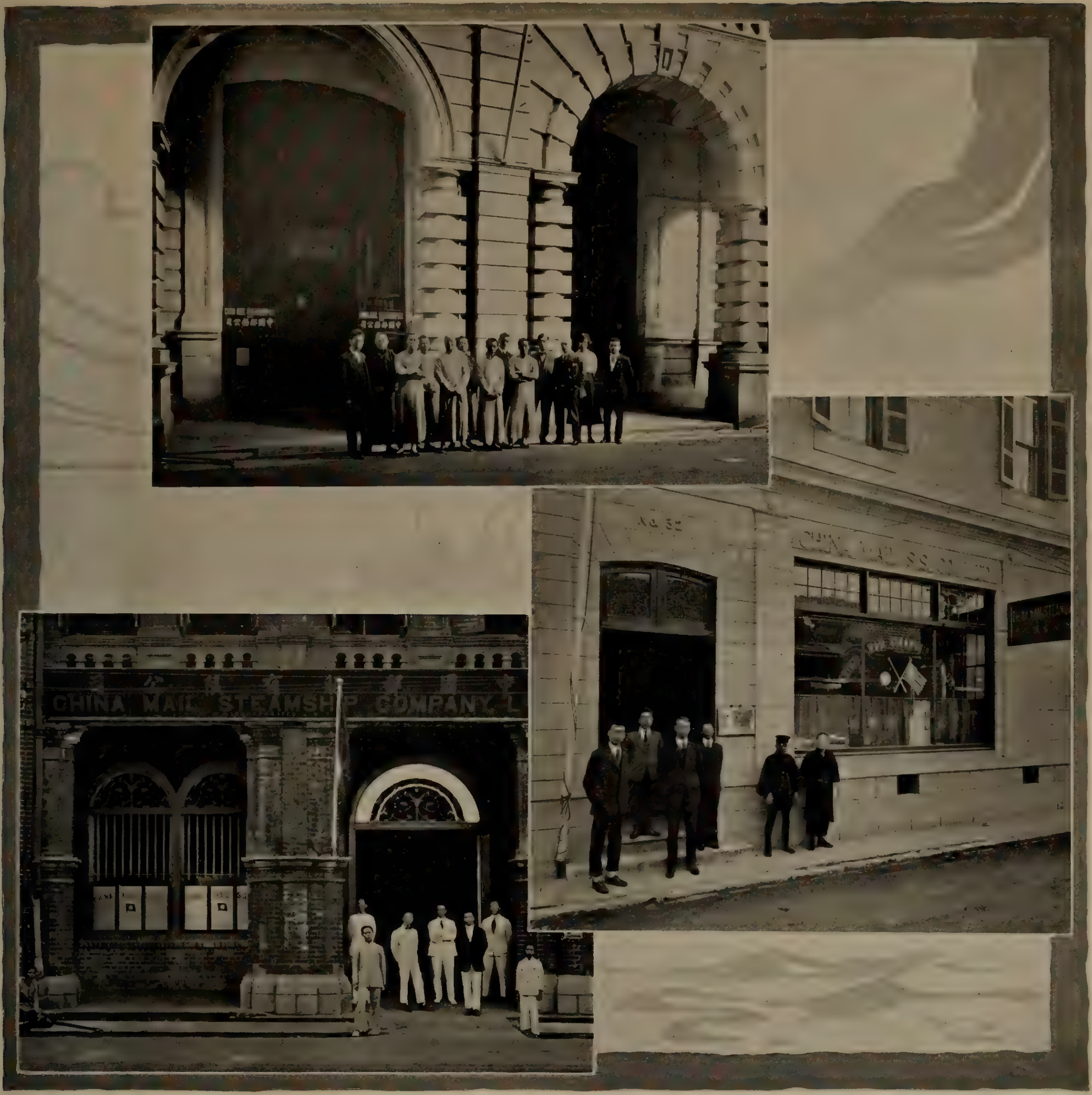
In the belief that the proposed bill is intended to maintain, enlarge and continue the American merchant marine created in an emergency, I respectfully submit that a sufficient American merchant marine is of far more importance to the American people than is the question in what American hands the ownership of such merchant marine rests.

# THE CHINA MAIL'S ORIENTAL OFFICES

THE most attractive and best located steamship office in Singapore, Straits Settlements, is maintained by the China Mail Steamship Company at 100 Robinson Road. It is the only ground-floor steamship office in that city, and is situated in the heart of the shipping district, thus being of easy and convenient access to shipper and tourist. The interior of the office is spacious, neat and attractive in appearance. The counter, of solid teak, is more than 100 feet in length. O. D. Martinez, freight and passenger agent of the China Mail at the Singapore office, is a steamship man of wide and varied experience. His courtesy, tact and good fellowship have made him many friends both throughout the Far East and in the United States.

The China Mail has just moved its Yokohama office to the center of the shipping interests in that Japanese port. It is now located at No. 32 Yamashita-cho. Nearly every shipping man in Yokohama and vicinity has made it a point to drop in and congratulate the agent on the splendid appearance of the new quarters. To S. R. Shepard, who has had more than ten years' experience at various ports in the Orient, has been assigned the duties of China Mail freight and passenger agent at Yokohama. Though recently Mr. Shepard has been engaged in steamship business on the Eastern side of the Pacific, a host of friends will welcome his return to the land of cherry blossoms and sunshine. "Syd" is willing, efficient, courteous.

Hongkong, the most important British crown colony in the Far East, is geographically the hub of shipping operations in the Orient. All trans-Pacific steamer lines and the principal Orient-to-Europe lines make Hongkong a terminal port of call. The China Mail's Oriental general agency is at Hongkong, where the company is represented by C. T. Surridge. Mr. Surridge has had a wide experience in railroad and steamship business, having held responsible positions in the United States, Alaska and elsewhere prior to joining the China Mail.



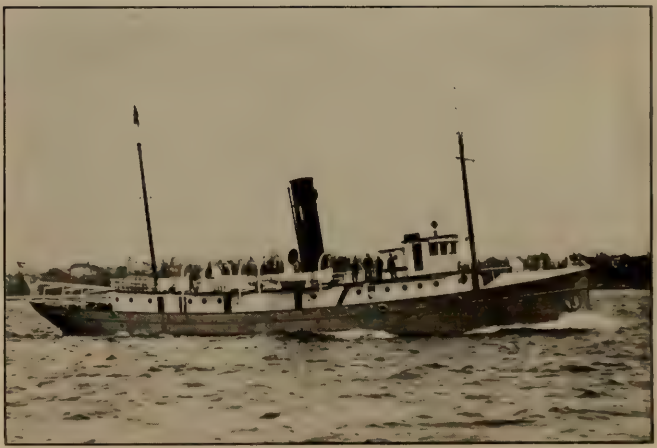
The illustrations show the offices and staffs of the China Mail Steamship Company in Hongkong, Singapore and Yokohama. Above appear the Hongkong general agency and C. T. Surridge, general agent, and his staff. On the left, below, are the Singapore office and O. D. Martinez, freight and passenger agent, and staff; and on the right, below, are the Yokohama office and S. R. Shepard, freight and passenger agent, and his staff.

# MARYLAND'S NEW PILOT BOAT

THE new steam pilot boat, built for the Maryland Pilots' Association by the Tebo Plant of the Todd Shipyards Corporation, left the builder's yard April 12 in charge of the new owners. On her arrival at Cape Henry, she relieved the Carmina, the old boat owned by the Maryland Pilots, and immediately went on duty as the station ship off the Chesapeake Capes.

On the trip down the coast the Maryland encountered very heavy weather and proved herself to be an excellent sea boat. On the way she exchanged greetings with passing craft and also went alongside of the various lightships so that although she is a new vessel she is already well known along the coast.

A full description of the Maryland was published in the May issue of Pacific Marine Review.



# THE FUNDAMENTAL NEED OF AMERICA'S MERCHANT MARINE

By JOHN L. BOGERT

**Before publication the author submitted this article to several solons at Washington. Among others the following reply seemed to be of especial interest:**

**My dear Mr. Bogert:**

**Your favor of April 19th handing me copy of your article on the merchant marine, at hand. I have read this through and it seems to me to be a very good article and brings out very important facts.**

**Very sincerely yours,**

**W. L. JONES.**

"THE sun never sets on the British Empire." Not an empty boast, but an adequate explanation for England's supremacy at sea. Merchant ships are the life blood of such a "far flung" nation. Will England quietly submit to have that supremacy wrested from her? No thoughtful man believes it. Has America a chance to challenge that supremacy? Certainly not, unless our people mean to make whatever sacrifices are demanded by a supreme commercial effort. Just briefly compare the strategical advantages of these two nations.

Overseas traffic must be two-way traffic to be efficient; merchandise must be brought home to pay for merchandise exported. If we tax the foreigner's products, we can hardly object to his taxing ours. We are, however, a protectionist nation, thoroughly committed to the policy of taxing imports. Great Britain is for free trade, and has a right to ask her foreign customers for the same treatment as she extends to them. Quite a serious handicap for America to face.

In the old days, the closing forty years of last century, it mattered but little to us whether our foreign trade was flourishing or not. Europe bought of us what she had to, and we produced but little more manufactured goods than we consumed. We were making more money developing our own resources than we could hope to do competing for the world's markets. Our customs tariff was generally framed with but one object in view—keep the American market for Americans. And we prospered as no nation ever prospered before. While we were doing this, Great Britain was gradually taking over our ocean-carrying trade. When the war started she had all but 9 per cent of it.

### All the Traffic Will Bear

When England carried our exportable products to Europe and other parts of the globe she fixed the freight rates on the principle of "all the traffic will bear", and then paid herself in gold from the proceeds of the sale of our goods. When British goods came seeking a market in America they paid a low freight rate across the ocean; when American goods went back they paid a high freight rate. All settlements were through London, whose bankers took a banker's commission on the business. The war changed all that, but now the war is a thing of the past, the question is, are we going to drift back to the old state of things? We most certainly will unless we apply all the brains we possess to the solution of the problem.

If two ships were seeking freight in Australia, one a British, the other an American, ship, all other things being equal, which ship would get the cargo? If the wool clip is to be carried to England or even America, a British ship is going to get it. The same is true of Australian mutton or anything else Australia produces. What is true of Australia is true of India, of South Africa, of Egypt, of any British colonial possession. The English are the foremost colonizing nation of the world, and their younger sons are in business everywhere and hold important commercial positions not only in the colonies and dependencies, but in many countries where British money is invested. What more natural than that their influence should be constantly given to furthering the interests of everything English, and especially to furthering the interests of British shipping? In world trade against such an army of advance agents America is rather helpless. Our younger sons are practically all at home in the United States. Comparatively speaking, but little American money is invested in the enterprises of other countries; we have been too busy developing our own. Just the opposite is the case with England; her money is invested everywhere, and her sons are largely looking after those investments. If machinery is to be bought, it will be British machinery, and it will be brought out in a British ship. If the English investments turn out profitably, their dividends are going back to the mother country in the shape of goods and materials the mother country does not produce, and they are going back as the return cargo of a British ship. Just where does America come in? Nowhere. If our overseas carrying trade is to survive, we must look out for our return cargoes ourselves; no one else will look out for them.

Right here it would seem to be appropriate to ask: Just what administration was responsible for signing treaties that cut us off from discriminating duties. Why in the 1850's was it possible to have such discriminating duties without evoking protests from foreign nations, and not now? Have our rights been sacrificed, and if so, by whom and for what? Have our friendly competing nations slipped something over on your Uncle Sam without his knowing anything about it?

### F. O. B. versus C. I. F.

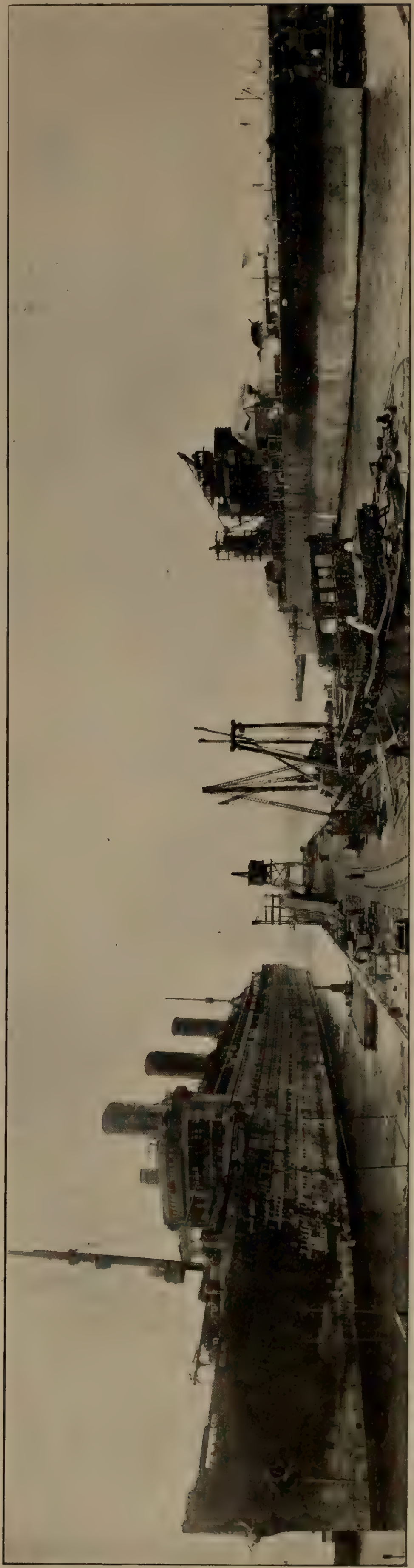
So long as foreign merchandise is sold delivered at the steamer's dock in New York or some other American port, the foreigner will control the trans-ocean shipment. And the foreigner's own national ship, if one is available, will get the business. This is so obvious that it needs only to be stated to be recognized as one of the important fundamental facts in the situation. For many years before the war German export houses were solicited to make hard and fast contracts with German steamship lines, to let them handle all shipments. The same condition must be reckoned with for the future. So long as Americans buy foreign goods in New York from the representatives of foreign concerns, the American ship in a foreign port can either sail in ballast or wait for a chance cargo. One has only to read the logs of American ships in the past to discover how many, many outward voyages were supplemented by homeward voyages in ballast. The reason for that state of affairs may be given as characteristic of the intense individualism of the average American. He proposes to look out for his own business and let the other fellow look out for his. Unfortunately, that won't work in the case of foreign trade shipping. Every American must make it his business to see that America's merchant ships get their fair share of the ocean carrying trade. "All for one and one for all" must be as much our slogan as it was that of the "Three Musketeers". It will certainly pay in the long run. If our ships can only count on outbound freights, their freight rates must be high enough to cover all expense both out and home.

Recently we had an excellent illustration of this very evident truth. When the American Congress appropriated money to buy food for starving Russia, Secretary of Commerce Hoover asked for bids for carrying the grain to Russian ports, American ships being specified as wanted. The prices quoted by all the operators of American ships were so much higher than those obtainable from foreign shippers that an explanation was demanded. The reply that was promptly forthcoming was that the American ship could not hope to get a return cargo, and hence could only afford to carry the grain at a figure that would pay all expenses to Russia and back.

Well, what are we going to do about it? It's a condition that must be changed, subsidy or no subsidy. Our ships can't live on one-way cargoes. Most certainly not if British and German ships are going to have two-way cargoes. There is a remedy. It is the overseas trading association. If American cotton, grain and other exportable merchandise were sold by American representative agencies in Europe and not in New York to foreign representative agencies, and sold delivered c. i. f. in Europe and not in America, our ships would get the business of carrying our exportable surplus over the ocean. The same American representative agencies should then buy for America what America can use of Europe's products delivered f. o. b. the dock in Europe, not in some American port. That's the sole and only way to insure a return cargo for the American ship.

After a most careful study of the subject I am convinced that the overseas trading association or its equivalent is the only solution of this problem. No matter how well designed and cheap our ships may be, no matter how skillfully handled and frugally managed, no matter whether fitted with diesel engines or not, they can't hope to compete successfully for the ocean carrying trade unless we can assure them a fair, reasonable chance for a two-way cargo voyage.

Just what are these overseas trading associations and how do they function? They are the general foreign agents of every producer in the United States, semi-national in character and under the same government inspection as a national bank; closely associated with the consular service. Their business would be to sell American goods at the highest obtainable prices, and to buy foreign goods at the lowest possible prices. Buying and selling there instead of here, they could control the "routing", which means that the American merchant marine could be sure of its homeward as well as outward bound cargoes. I am frank to confess I can conceive of no other possible solution of the problem of how to face foreign competition on the high seas. To a certain extent my solution is not original, since for many years in different quarters of the globe British consular officials have expedited the movement of British merchant ships to the utmost of their ability. All Englishmen are interested in the success of their merchant marine.



The greatest merchantman and the most powerful dreadnought meet. On the left is the Leviathan, which is being reconditioned by the Newport News Shipbuilding & Drydock Company; on the right is the U. S. S. West Virginia, under construction by the same yard. Although the Leviathan's gross tonnage is 54,282 as against approximately 56,000 of the Majestic, the two are essentially sisters. The West Virginia and her sisters, Colorado and Maryland, are practically equivalent to the Japanese Nagato and Mutsu, the United States vessels having 32,600 tons' normal displacement, eight 16-inch guns and speed of 21 knots as against 33,800 tons, eight 16-inch guns and 23 or 23.5 knots (unofficial) of the Japanese dreadnoughts. But one must resort to such data as these to discover any inferiority of the American vessels; no difference would be apparent at a casual glance.

# THE WAR ON THE TEREDO

COMPARABLE to an unheralded invasion of Texas cotton fields by the boll weevil or a plague of grasshoppers sweeping across a Middle Western state, schools of teredo worms, probably numbering millions or billions, have swept into harbors on all coasts of the United States. The unfortunate experience of San Brancisco Bay, where damage aggregating millions of dollars was done, already has been dwelt upon at length by many publications. Less well known, however, is the fact that New York is facing much the same destruction. At a recent meeting of the National Research Council and the Engineering Foundation announcement was made that the teredo had been discovered not only in Barnegat Bay but in Sheepshead Bay as well. A piece of pine timber taken from a pier in the latter place was honeycombed and one end had been eaten away. At Barnegat pier, said Professor Thurlow C. Nelson, biologist of the State Experiment Station and State Board of Shellfisheries, New Jersey, who discovered the teredo in waters of that state, a cypress platform had been riddled and sunk, and another platform situated in a tidal creek near his laboratory was invaded. Professor Nelson attributed the extension of the teredo's activity to the fact that last year was one of the five driest ever recorded by the United States weather bureau for New Jersey, because of which salt water entered many places theretofore filled with fresh water. Much the same explanation was advanced for the inroads of the worm into upper waters of San Francisco Bay, as large quantities of fresh water had been diverted from rivers for rice cultivation.

### $20,000,000 Damage at San Francisco

A paper by Dr. Hermann von Schrenk of St. Louis, consulting engineer of the New York Central, New York, New Haven & Hartford and other railroads, said that the borer that had appeared in New York was the same that caused $20,000,000 in damage at San Francisco and for centuries had destroyed marine structures in waters of Western Europe. What occurred in San Francisco might occur in New York, said Dr. Schrenk. High sewage pollution appears to be no protection. "For years we have believed that the high sewage pollution of the waters of the New York district has rendered teredo attacks more or less problematical. It is, therefore, rather disquieting to be informed that the organism which is at work in San Francisco Bay appears with just as much vigor near the mouths of large sewers as it does elsewhere; in other words, that this particular form appears to thrive in waters with high sewage pollution. We may, therefore, not be as safe in New York from an invasion of this organism as we thought."

A statement issued by a general committee appointed by the two organizations named above said that "the particular borer which has appeared at San Francisco and which has been discoverd along the Long Island and New Jersey coasts reproduces with incredible rapidity. There may be as many as 50,000 to 100,000 females in one pile and each female may give birth to 500,000 to 1,000,000 live young shipworms. These are free swimming and attach themselves to unprotected wood. Marine piles twenty inches to twenty-four inches in diameter have been practically riddled in six months. These marine borers, of which other common species are of the genera xylotrya and limnoria, occur with the greatest frequency in the warmer seas but on the Atlantic Coast of America have extended as far north as Maine and on the Pacific Coast to Seattle and Alaska. On the Atlantic, their attacks have been of prime importance hitherto south of Delaware Bay. Their previous absence from New York and vicinity has been ascribed to high sewage pollution. In spite of the fact that shipworms have been known for many centuries, very little has been learned of their food habits, their methods of distribution, their relation to salinity and temperatures and their reactions to chemical poisons of various sorts. Immediate investigations with relation to these fundamental factors appears to be of prime importance in order that protective measures may be developed. The San Francisco experience suggests the wisdom of obtaining information in time to prevent large losses, and therefore the National Research Council and the Engineering Foundation are organizing an exhaustive investigation."

### An Experiment With Eucalyptus

In one of the statements issued by these organizations was a resume of Professor Nelson's report, which appeared above. A cypress platform, said he, had been riddled and sunk, the deduction being that that wood at least was not immune. In such a state as obtains today, naturally one of the first solutions sought would be some timber that of itself would resist the worm. By accident, what may be a valuable contribution to the solution has been discovered in Hawaii. The following excerpts from a letter from Lyman H. Bigelow, chairman of the board of harbor commissioners of the territory, will be of interest:

"In making repairs to one of the old wooden wharves on this island (Oahu), some eucalyptus trees were cut and used for piling. Since then we have replaced this old wharf with a concrete structure and it was noticed in dismantling the old wharf that the eucalyptus piling was still in first-class condition, having been in the water then for a period between two and three years. These piles were not removed, but were left for experimental purposes and will be examined from time to time."

Before this experiment could be regarded as conclusive, much investigation would be needed to determine the presence of large numbers of borers and so on, because for some reason or other the teredo might have had no great opportunity to attack the wood. Nevertheless, it is possible that eucalyptus may offer a natural resistance due to the presence of large quantities of oil in the wood.

In order to grapple with the teredo, the joint committee of the National Research Council and Engineering Foundation will organize local committees at principal ports. The first committees to be formed will represent New England, Chesapeake Bay, Charleston, the Gulf, which will have two, and Puget Sound. Immediate data will be gathered as to temperature, salinity, oxygen content, tidal currents, and so on, of selected waters tributary to New York harbor, and a definite biological survey will be undertaken to determine food conditions and the distribution of marine organisms.

# THE SALVAGE OF THE GARFIELD

## Grace Steamship, Stranded in Five Feet of Water, Is Floated by the Salvage Section of the Panama Canal

ON the night of January 20 the Grace Line steamship Garfield, a steel vessel of 2941 tons gross and 300 feet in length, was skirting the coast of Colombia. Her master mistook the Galera Point light for that of Puerto Colombia, and as a result found himself in shoal water in the Bay of Galera de Zamba, about 25 miles northeast of Cartagena. He dropped anchor, but the Garfield swung around in heavy seas, dragged her anchor and grounded astern; thereupon the anchor carried away, and the steamship was swept toward land for a distance of 1¾ miles from the 18-foot contour and came to rest in no more than 5 feet of water, although she had been drawing 14 feet 6 inches in the open sea.

In this situation the Garfield's underwriters called upon the Panama Canal salvage section January 24. The salvage section succeeded in saving the vessel, despite the great difficulties encountered. In what follows the salvage operations are described by E. P. Jessop, marine superintendent of the canal.

The salvage tug Favorite received orders to equip and proceed at 10:40 a. m., January 24, and left the port of Cristobal at 4:50 p. m. the same day, arriving at Galera Bay at 8:40 a. m., January 26.

### Surrounded by Breakers

Breakers were showing all around and it was evident that the charts did not give information as to channels and depths. It was therefore necessary before the Favorite could enter the bay safely to run surveys and buoy out channels, which was done, and the Favorite entered a channel not shown on the chart at 7 a. m., January 27, anchoring in 20 feet of water 1½ miles north-northwest of the Garfield. The Garfield was then lying parallel to the beach, broadside to wind and surf and about 150 yards from the shore line, heading west-southwest.

Soundings showed only six feet of water for a distance of about 150 yards to seaward of the ship, while soundings alongside showed 8 feet 6 inches forward, 11 feet amidships and 9 feet aft. Soundings to seaward showed a gradual deepening from 6 feet at 150 yards to 9 to 12 feet at a distance of 2700 feet.

The bottom showed hard sand, which, however, had a shifting tendency due to the heavy surf and undertow caused by strong trade winds, which blow practically constantly from December to May from north and northeast. The work had to be carried on in an almost constantly breaking sea, short and steep too, which made boating hazardous and extremely disagreeable. The wind at times blew with a force of 50 miles an hour and the average was about 25 to 30 miles.

The Garfield as she lay just before a cable was put aboard. She was heading W. S. W. Deep water was one and one half miles distant

### A Continuously Heavy Sea

The Garfield's draft was 14½ feet and to get to her from that depth of water where the anchors were finally planted required the running of 8300 feet of 2-inch wire cable. The first line got on the ship parted, due to a faulty section of cable, and the ship then moved a trifle farther in and brought up in five feet of water, with other conditions as described above. The sea at this time was so heavy that a staunchly-built motorboat was broken up while trailing astern of the Favorite on a sea painter. Boats that were coppered on their under-water surface had the copper sheathing torn from the bottom. On February 26 the new wire cable was attached to the ship and heaving began. From that day until March 16 a constant strain was maintained on the wire and the ship spasmodically moved out, the daily distance recorded running from 9 feet in the early stages to 200 feet as the water gradually deepened to 10 feet.

### Broken Line Spliced

On March 17, with 700 feet still out on the cable, the Favorite lightened ship by pumping out her water ballast and went in and anchored in 19 feet of water with 17 feet showing immediately astern of her. From this place she ran 6800 feet of manila hawser and connected to the steel cable on the ship to haul the cable out to where she could connect her steel tow line. An 8-inch section of this hawser carried away at midnight with a heavy sea running, but in spite of the really grave danger involved the master of the

The Garfield heading E. N. E., the vessel having swung about when the first cable parted

Favorite lowered a boat and picked up the broken end, completing the work ready for connecting up at 2:30 a. m. This work was rendered easier by the seamanlike forethought of the wreckmaster, who had buoyed the manila line at each splice, but with this assistance it was still a remarkable piece of work and vital to the ship because she was practically "hove short" on the only cable out, and if that carried away before the Favorite got hold of her nothing could have saved her.

At 8:30 a. m. the 6720 feet of steel wire cable had been run from the ship to the Favorite and the worst was over; at 3:45 p. m., March 18, the towing line was made fast, and at 3:55 p. m. the Favorite left Galera Bay for Cristobal with the Garfield in tow with ship and cargo intact.

The seamanship displayed by the wreckmaster, Captain F. Kariger, and by Captain Penseyeres of the Favorite was throughout of the highest order and heartwarming for those of us who have watched with increasing gloom the disappearance of true sailor ability from ships at sea.

The amount of tackle used on this operation demonstrated the wealth of equipment the Panama Canal has for such work.

### Panama Canal's Salvage Equipment

The following comprehensive description of the salvage equipment of the Panama Canal will be of interest to shipowners and underwriters.

The wrecking tug Favorite is well known to any seafaring man who has been in touch with work on the Great Lakes, since she operated for several years on the Lakes before she was requisitioned by the Navy for salvage work on the coast of France in 1918. She was turned over to the Panama Canal in June, 1920, for use as a combined lighthouse tender and salvage steamer. She is a 12-knot steamer, of 1200 horsepower, equipped with 25-ton derrick and a powerful modern towing engine. She has cargo space for about 800 tons, and carries 500 tons of water. Due to the great amount of water ballast she can be lightened, as was done in the salvage of the Garfield, so as to operate in shallower water than would ordinarily be the case with a vessel of her size and power.

The canal now has full salvage equipment, including four portable 12-inch centrifugal gasoline-driven wrecking pumps, and four 4-inch submersible electric salvage pumps of a total combined capacity of 2440 tons discharge per hour. In addition there is a number of steam-driven portable pumps, which considerably augment pumping capacity.

Ground tackle of all descriptions and reserve supplies of wire and chain cable to any extent desired are available, as well as diving equipment with competent divers, and barge equipment for any demand that may be made.

The Favorite is being converted for oil burning and so equipped will have ability to remain on a job for a month without refueling.

### Three Forms of Contract

The Panama Canal will undertake salvage operations under three forms of contract:

(a) Hire Favorite and wrecking crew at $1500 a day with extra charge for all equipment used except standing equipment on Favorite.

(b) Fixed price for job with graduated reimbursement in case of failure or partial success.

(c) No cure, no pay: fixed price dependent on value of ship and cargo and difficulties involved, with graduated payment in case of partial success.

Of the three types of contract the Panama Canal would recommend to owners and underwriters the use of the first type for the following reasons: It obviates any delay, since all that is necessary is to cable or radio the Panama Canal to go get the ship, when the Favorite will be placed on the daily salvage rate and dispatched immediately. Very frequently promptness in this saves much time and consequent expense in the completion of the job. In the case of the Garfield it is probable that two-thirds of the time would have been saved. This plan will also in almost every case save from 50 to 100 per cent in cost to the owners and underwriters. This is true because the Panama Canal maintains salvage equipment for the service of shipping and as part of the canal's duty to shipping, particularly since that part of the world does not offer sufficient inducement to salvage companies to maintain adequate equipment in these waters. Therefore the service is more or less non-commercial, since it is to the best interest of the canal to expedite shipping in every manner possible, and the efforts of the wrecking crews are to make a record of quick work for the canal rather than to draw the work out in order to make the money return greater. This attitude of the wrecking crew is clearly shown in the Garfield case. This contract is of course most satisfactory to the canal as it assures proper return for services rendered. The other types of contract are standard and need no explanation.

The tug Favorite, Panama Canal Salvage Section

# NEW CRAFT FOR THE LIGHTHOUSE BUREAU

## Consolidated Shipbuilding Corporation Completes Two Tenders and One Lightship, the Last of Which Will be Used Off Cape Hatteras

The lighthouse tender Hawthorn

THE Consolidated Shipbuilding Corporation, Morris Heights, New York City, recently completed and delivered to the lighthouse bureau two 160-foot lighthouse tenders, named Oak and Hawthorn, and one 147-foot lightship, Diamond. These vessels were under construction at the Consolidated yards for a year, and were built to the specifications of the government.

The lighthouse tenders are constructed of steel, vertical stem and overhanging stern, a continuous main deck, a raised forecastle deck, a main deckhouse and partial upper deck, and upper deckhouse aft and steel foremast. All framing, shell, bulwarks and rails, the main forecastle, and partial upper and lower decks aft, the traverse and longitudinal watertight and non-watertight bulkheads and the derrick mast are constructed of steel.

### Six Watertight Bulkheads

The space below the main deck is divided into six compartments by transverse watertight bulkheads. The main hold is arranged to accommodate fresh-water tanks and steam hoisting engine and rig. The boiler space is arranged with the boiler. Wing coal bunkers have a total capacity of about 80 tons, an ash ejector, etc. The machinery space is arranged with the main propelling engines, condenser, pumps, steering engine, auxiliary machinery work bench, etc. The space forward above the main deck and under the forecastle deck contains the windlass engine and gear with chain stoppers.

The forecastle deck is arranged with capstan, driven by the windlass engine. The buoy deck, between forecastle and main deck, is fitted with crew's companionway, cargo hatch, steel mast, etc. The main deckhouse is arranged with a space for distant control levers for hoisting engine, entrance to hold, ice-box, galley, crew's water closet and wash room. The upper engine room is arranged with electric generating set, lifting gear for engine, transom seat, etc. Aft of the upper engine room are the chief and assistant engineers' rooms, officers' bathroom, pantry, officers' mess, mate, cook and steward's room, etc.

The partial upper deck is of steel arranged with steel pilot house.

### The Steam Generating Plant

The steam generating plant consists of one Scotch type boiler, burning bituminous coal. The main propelling engine consists of one vertical triple-expansion engine, surface condensing, driving a single screw.

The principal auxiliaries consist of one main air pump, one centrifugal circulating pump, two feed pumps, one feed tank and filter box, one grease extractor, one feed water heater, one injector, one fire deck and bilge pump, one sanitary pump and pressure tank, one pump and pressure tank for the hot and cold water system, one steam steering engine, one electric generator, one steam anchor windlass engine with shaft-driven capstan on upper forecastle deck, one electric hoister on upper deck aft for handling boats, etc.

The general dimensions of the tenders are: length over all, 160 feet; beam, 30 feet; draft, 9 feet 6 inches; indicated horsepower, estimated, 700; main engines, triple-expansion, 13½x22x36x24-inch stroke; boiler, Scotch type, working pressure, 200.

### New Lightship Diamond

The new lightship Diamond had her trials on the Hudson River, as did the tenders, extending over a period of eight hours. This vessel is the largest light vessel in the world and will be stationed off Cape Hatteras on the outer Diamond Shoal, one of the most treacherous and exposed points on the Atlantic Coast. The vessel is to replace the former light vessel No. 72, which was sunk by the guns of a German submarine August 6, 1918, while occupying this station. Light vessel No. 105 will be red in color and bear the name Diamond in large white letters on each side. Her general dimensions and description are as follows: length over all, 147 feet; length between perpendiculars, 121 feet 6 inches; beam, 30 feet. Displacement, 825 tons. Indicated horsepower, 400.

The vessel is of the self-propelled type, single-screw, driven by a fore and aft compound engine with cylinder diameters of 16 inches and 31 inches and a common stroke of 24 inches. Steam will be supplied by two Scotch boilers using oil.

The vessel will show a flashing light from a 375 m.m. lens lantern at the foremast head, the illuminant being acetylene gas, controlled by an electric flasher operating the gas burners, and giving the light a characteristic distinguishing it from other lights on the neighboring

The lightship Diamond, named for the shoal on which she will be used coast. This apparatus will be in duplicate, with a lantern on each of the two mastheads, so that in case of accident the other light may be used.

### A Radio Fog Signal

The vessel will be equipped with three distinct fog signals, a steam chime whistle, a submarine bell, and an automatic radio fog signal, thus using three different mediums for sending warnings to the mariner of danger in fog. No. 105 will be the first lightship of the lighthouse service to be equipped on construction with the radio fog signal.

The crew are provided with comfortable quarters and conveniences, including a refrigerating plant.

G. R. Putnam, commissioner of lighthouses, and E. C. Gillette, superintendent of naval construction in the lighthouse service, attended the trial trips of these three vessels, representing the government, and Bruce Scrimgeour, secretary and general manager, and Albert Christen, superintendent, representing the builders.

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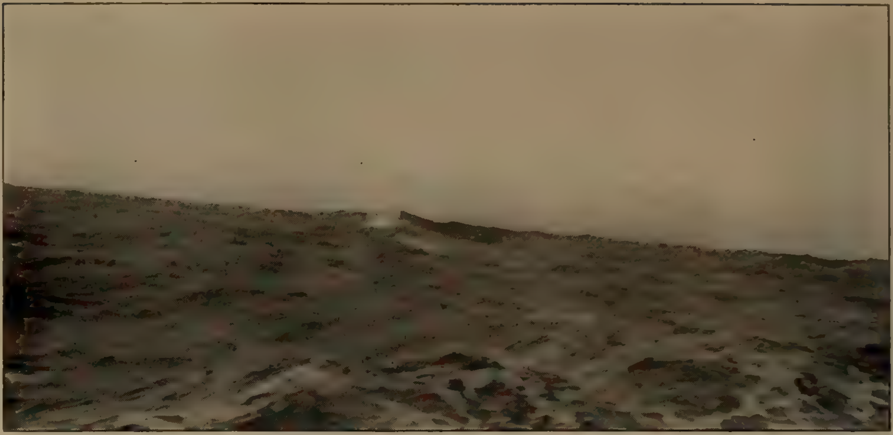
## Book Reviews

**The Mexican Year Book 1920-1921,** edited by Robert Glass Cleland, Ph. D.; 525 pages, with map; bound in buff buckram with black stampings; published by the Mexican Year Book Publishing Company, Los Angeles.

This timely volume, issued to meet the demand for information concerning Mexico, has been written expressly for the American public. It has no official or unofficial connection with the Mexican government. The former Mexican year books, compiled primarily for English use and having some measure of official patronage, ceased publication in 1914.

The peculiar difficulty in obtaining reliable data concerning Mexican affairs is frankly acknowledged by the editor of the book. This ever present difficulty has been greatly increased by the confusion into which so many of the sources of information have been thrown by recent revolutionary disturbances. A very consistent effort has been made to check up information, and special articles have been written by scholarly contributors whose experience and positions gave them special facilities for first-hand information.



State of the sea during the salvage of the Garfield. See pages 351 and 352

Adequately indexed as a work of reference, this book contains in an appendix the text of many of the more important legislative and economic treaties and conventions, the tariff enactments, weights and measures, the postal service, and the entire text of treaties between the United States and Mexico from the year 1828 down to the date of publication. In the appendix there is also a very elaborate glossary giving the best methods of canvassing in Mexico and the trade particulars of its more important commercial centers.

All merchants, manufacturers and shipping men interested in trading with our southern neighbor should find this book extremely useful.

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**Modern Economic Tendencies,** An Economic History of America, by Sidney A. Reeve; 875 pages; bound in tan buckram with black stampings; published by E. P. Dutton & Company, New York.

This book is a very ambitious attempt to set down from one point of view the history of the evolution of American economics. The treatment is sane and very evidently a great deal of scholarly work has been expended on research.

To quote the author's own words, it represents what he "believes should have been the major duty and official business of the entire profession of economists and sociologists during the last quarter-century. It was during the winter of 1889-90 that the author, instigated by reading Henry George's 'Progress and Poverty' and Edward Bellamy's 'Looking Backward,' and having just reached the age of interest in public affairs, perceived the striking crudities of the commercial system as the one crucial problem destined to form the nucleus around which the next generation of progress must gather shape. So vast are the aggregates of human effort involved in this question that it was to him indubitable at that time—although then one saw the word socialism in print not twice a year—that those men who were busying themselves with the formation of such enterprises as the Standard Oil Company, the Pennsylvania Railroad or the United States Steel Corporation were playing at tops and marbles, in comparison with the man's job of straightening out our world-system of economics as a whole."

Beginning with a study of our background in economics in connection with the commercial life of New England, the author from his own particular point of view analyzes every important step in our commercial evolution, drawing his own conclusions, and finally making it plain that while he "believes that our American political democracy is the highest and best form of political government extant, that it accords liberty to all as nearly as any political government can do, he also believes that all our troubles arise not from our political imperfections, but from our economic institutions, wherein we completely lack organization or constitution. For the natural economic sovereignty of the Ultimate Consumer over matters economic now lacks recognition as completely as the equally basic sovereignty of the individual voter over matters political was unrecognized in 1750.

His suggested remedy for the economic chaos into which he sees this country and the rest of the world descending is to educate public opinion up to a point where the organization of Ultimate Consumers will be able to practice social control in order to overcome the faults of mutual relationship, that in all things we may keep "faith in God and the rights of the Ultimate Consumer."

# IN THE GRAVEYARD WATCH

### The Old Blind Poet.
### Sharks of Land and Water.
### Vancouver Masses Reserves.
### O. H. 10 and the Blue Hen State.

AT A TIME when printing presses are pouring out "literature" in floods that threaten to overwhelm us all, it is a relief to turn to a few books that stand like rocks above a sea of froth. Three in particular remind me of nothing so much as sheer peaks rising from flooding and ebbing tides of ephemeral stuff into the sky. One of the three is worthy to be read in the declining days of the race. Its title is Robinson Crusoe. A second might be perused by the last handful of men as they huddle about a dying fire on an icy atoll, for in it they will hear the glad sounds of clashing steel and the thunder of hoofs on a road at midnight. It is entitled The Three Musketeers. And the third — well, I shall leave the reader in suspense for a moment; I withhold its title while I remark that one clean sea wind blows through it and through Robinson Crusoe; and the author of The Three Musketeers, "the great, unblushing French thief," as Stevenson called him in a moment of tender admiration, laid tribute upon the book I have in mind, just as Stevenson, himself not to be despised among light-fingered gentry, filched from Dumas, and as the next great writer of romance who stands around the corner will steal shamelessly from his mighty predecessors. This third book should be the cherished possession of the last man, for in it he shall see the ocean as it was in the young days of the world, when mariners steered by the stars, when every voyage was likely to take one into unknown seas, and the wanderer gazed wide-eyed at each landfall as it lay like a little cloud on the blue Aegean.

## Odysseus the Shipbuilder

> *She gave him a great axe, fitted to his grasp, an axe of bronze double-edged, and with a goodly handle of olive wood fastened well. Next she gave him a polished adze, and she led the way to the border of the isle where tall trees grew, alder and poplar, and pine that reacheth unto heaven, seasoned long since and sere, that might lightly float for him. Now after she had shown him where the tall trees grew, Calypso, the fair goddess, departed homeward. And he set to cutting timber, and his work went on busily. Twenty trees in all he felled, and then trimmed them with the axe of bronze, and deftly smoothed them, and over them made straight the line. Meanwhile Calypso, the fair goddess, brought him augers, so he bored each piece and jointed them together, and then made all fast with trenails and dowels. Wide as is the floor of a broad ship of burden, which some man well skilled in carpentry may trace him out, of such beam did Odysseus fashion his broad raft. And thereat he wrought, and set up the deckings, fitting them to the close-set uprights, and finished them off with long gunwales, and therein he set a mast, and a yard-arm fitted thereto, and moreover he made him a rudder to guide the craft. And he fenced it with wattled osier withies from stem to stern, to be a bulwark against the wave, and piled up wood to back them. Meanwhile Calypso, the fair goddess, brought him web of cloth to make him sails; and these too he fashioned very skillfully. And he made fast therein braces and halyards and sheets, and at last he pushed the raft with levers down to the fair salt sea.*
>
> —*The Odyssey of Homer, translated by Butcher and Lang.*

I have in mind the Odyssey. My object in discussing it is to persuade one person or two or three to read it. To peruse Conrad and other modern masters who have written classics of the sea is well enough, but none of these gentlemen answers for old Homer. Yet I hasten to add that not all translations are acceptable, that indeed only one is to be commended, and it is by Butcher and Lang. In that rendition, which is in the smoothest, sweetest flowing prose imaginable, the mariner of today shall see himself and the sea, ever ancient and ever young, mirrored in an epic almost three thousand years old.

I like to believe that Homer, the blind man (as blind he must have been, for none but the sightless could have loved so much the myriad colors of the sea and dawn and sunset, or the flashing of the good sun in hollow troughs of ocean), led by a small boy, his grandson perhaps, wandered about some old Mycenaean village until the smell of salt in his nostrils and a babel of strange tongues in his ears told him that he had come to a beach where the galleys of Greek and Phoenician and Egyptian and those peoples whom the Hellenes called Cimmerians were drawn up on the tide flats. There he and his red-haired progeny (for the old Greeks were blondes) seated themselves and attended to tales that rolled trippingly from the tongue of some mariner just in from Asia Minor or Thrace or the distant Euxine, whither Jason not long since had sailed in quest of the Golden Fleece. Throughout a long afternoon would the two sit listening to outlandish adventures told by some smooth young rogue of a Greek, who did not blush as he recoined tales heard at Suez from an Arab trader in Eastern spices. The Arab, in turn, lay under heavy debt to a merchant of the Ganges whom he had met in a wine shop of the port now called Karachi. The two had passed an evening more than pleasant; strange sweet wine had flowed abundantly, so it was in no wise remarkable that things were seen and heard through a golden haze. The Indian, thievish as all seamen of his day seemed to be, had merely dressed in new garb stories told to him by a Chinese wanderer under the palms of Java on the western shore of a sea studded with many islands. Through more than one tongue had the mad narratives come, until the sing-song of Chinese, passing through Bengalese and Semitic, was transmuted into "tender, grave Hellenic speech," plastic clay for the old blind poet. Thus sat Homer and his grandson, listening to immemorial tales of the immemorial sea, until the long rays of a setting sun painted the Aegean in red and gold. Then they arose and moved homeward.

But the boy turned and gazed behind him. "It must be wonderful to be a sailor!" cried he. The old blind man smiled in his beard. "Why?" "Because sailors go everywhere and have wonderful adventures." "Then you believe all that you have heard?" asked the grandfather. "Isn't it true?" demanded the boy in pain. "No, not all; not quite all," replied his grandfather sadly. "But you will put it in your book," returned the boy, half accusingly, half hopefully. "Aye, aye," cried Homer, "and wish I had more."

## THE ODYSSEY

By Andrew Lang

As one that for a weary space has lain
Lull'd by the song of Circe and her wine
In gardens near the pale of Proserpine,
Where that Aegean isle forgets the main,
And only the low lutes of love complain,
And only shadows of wan lovers pine—
As such a one were glad to know the brine
Salt on his lips, and the large air again,—
So gladly, from the songs of modern speech
Men turn, and see the stars, and feel the free
Shrill wind beyond the close of heavy flowers,
And through the music of the languid hours
They hear like Ocean on a western beach
The surge and thunder of the Odyssey.

* * *

THERE BE, as Shakespeare might have said, water sharks and land sharks (I mean salesmen of oil stock), and then there be men to lie about both. I myself, not over given to truth-telling, find it difficut to keep pace with the colossal figures, those giants of men, who make sharks their favorite theme of discourse. Nor am I alone in my confession of abject humility. There's the Ropeyarn Club of Honolulu, for example. I fancy that more downright, outrageous, indefensible lies have been spun in the office of the harbormaster at Pier 7 than in any other single room of the world. Why, the official communiques of the (in a manner of speaking) recently warring nations did not compare in sheer depravity with the round of (so-called) reminiscence that could be heard there; yet the gray-haired members of that (more or less) esteemed Ropeyarn Club did not dare mention sharks. If they had, they would have cast off even their hypocritical semblance of truth and would have lost all mutual respect, for the first duty of a polished liar is to appear to give complete credence to what the other fellow has to say,—and then go him one better.

It is with considerable relief, therefore, that I observe that Sydney (yes, the city that acknowledges that it has the single perfect harbor of the world) has contributed something essentially truthful and unimpeachable to the vast literature of sharkdom. That city recently suffered from an invasion at Coogee beach, where more than one swimmer was attacked and wounded so severely that he died. Naturally, the newspapers, in a dull season, when there was neither racing nor a stevedores' strike to discuss, made the most of the occasion. I cull a few choice bits from the mass of flotsam. The following may be accepted as well established truths:

A shark will not attack a man in a diving suit; that is, I mean to say, a shark in a diving suit will not attack a man; let me get this straight: an individual of the genus homo, attired in a diving suit, will not be subject to danger from the carcharodon carcharias. On the other hand (this, I take it, is right), at least one diver has lost part of his suit to a shark. A third has worked in the Mediterranean and in Australian waters for twenty-four years in twenty-six fathoms of water (there's a man for you, no uncertainty as to facts and figures: never content to descend to a depth that varied from twenty-six fathoms by the breadth of a hair) and not a shark approached within twenty feet of him. Sharks have been killed with the thrust of a knife. The only manner in which a shark can be killed in the water is ripping his belly entirely open, as the natives of the South Seas are accustomed to serve him. A shark will not attack a brown man. The sharks of Uea, Loyalty Group, love native meat better than they do Astrakhan caviar.

I might continue; I might even detail some of the schemes proposed to rid Coogee beach of sharks, but I desist. I really must maintain my standing in the Ropeyarn Club, harbormaster's office, Pier 7, Honolulu.

* * *

I OBSERVE THAT our Canadian neighbors are vexed at the Seattle Chamber of Commerce. That organization, never altogether dumb when speaking of Puget Sound, recently asserted that the Shipping Board 535's operated by the Admiral Line had broken all records between Yokohama and the Pacific Coast of North America. Asserted, did I say? Rather did the Seattle Chamber of Commerce vociferate from the housetops, to such good effect that a still, small complaint of the Canadian Pacific was quite stilled for the time. But now the C. P. has its innings, and proclaims quite as emphatically, if not so stridently, that its own Empress of Russia arrived at Williams Head May 30, 1914, 8 days 18 hours and 31 minutes from Yokohama, and that her record remains unbroken to this day. In June, 1919, shrieks the C. P. siren, the Empress of Asia made the passage in 8 days 21 hours and 4 minutes. All the while the Admiral Line sits quietly with a bland smile playing on its lips and points to its own statement regarding the Pine Tree State, which merely said that the vessel had surpassed former records of her sister ships. "We are hardly to blame if the Seattle Chamber of Commerce misunderstands the spirit and letter of our statements," is the gist of the Admiral Line comment; but that plain statement of fact merely serves to send Vancouver to the verge of apoplexy. If conditions do not improve, I predict that British Columbia will be making a frontal assault on the L. C. Smith building, which, as all the world knows, is the tallest structure west of Chicago or Red Gap or some other city. And while this devastation is brewing, the Seattle Chamber of Commerce continues to issue bulletins such as this: "All records for the movement of silk from Yokohama to New York via Seattle were smashed on the shipment landed here recently by the Admiral liner Silver State, when the shipment reached New York in just 13 days 12 hours and 20 minutes after it left Yokohama. The best previous time was made by Canadian Pacific vessels and the Canadian Pacific Railroad, 5 hours and 42 minutes behind the record set by the American line."

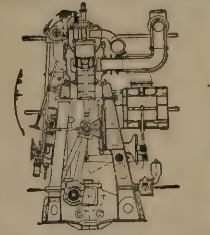
It's all right, it's all right (don't think that I am complaining); but I hope that those statistical machines of Seattle never begin computing the time of silk in transit in seconds and hundredths of seconds. If they do, the C. P. will go one better and install mulberry branches and silkworms on a few promenade decks; and then the only recourse of Seattle will be to move a few thousand square miles of Japan to Puyallup. These ills, gentlemen, flow from too much competition.

* * *

AFTER ALL, giving the Shipping Board's liners the names of presidents instead of the nicknames of states will make for international amity. State nicknames are like stock family jests, always in order about the dinner table at home but a trifle puzzling to strangers. Some of them even may have aroused ribald laughter. Liverpool, I dare say, ignorant of the fact that a noble English lord was to blame, would roar at Blue Hen State; and we should remember that it was a British tar who rendered the name of the battleship Ohio as "O. H. 10." I fancied the old names myself, yet I approve the change.

THE SECOND MATE.

## Oil Engines and Motorships



# FIRST AMERICAN MOTORSHIP AROUND THE WORLD

THE motorship William Penn on March 19 completed her maiden voyage of 28,500 miles around the world, and completely demonstrated the reliability of diesel drive in an American vessel under American registry and the great economic superiority of the American motorship over the American steam-driven vessel.

On arrival in New York the propelling machinery was found to be in perfect condition, with no expenditures whatsoever required for repairs. The exhaust and inlet valves of main engines were changed only once during the voyage. All work on the main engines, which was of a routine nature, was done by the engineer personnel while in port, and all similar work on the auxiliary engines and machinery was done while under way at sea. The auxiliary engines worked perfectly throughout the trip, and were run at times over 500 hours without stopping. There was no involuntary stopping of the vessel at any time throughout the voyage.

The William Penn is 455 feet over all, 445 feet between perpendiculars, and 60 feet beam, with a designed draft of 28 feet 4¾ inches, loaded, corresponding to 12,375 tons deadweight, and 17,100 tons displacement. The machinery has been previously described in Pacific Marine Review and is the same as is being installed by the Cramp Company in the American-Hawaiian Steamship Company's motorships Californian and Missourian.

The main engines are six-cylinder, having a diameter of 29⅛ inches by 45¼-inch stroke, and originally designed for 4500 I.H.P. for the two engines when turning at 115 R.P.M. Due to the full form of the hull revolutions were reduced to 108, corresponding to the 4200 I.H.P. required for 11.5 knots.

There are three auxiliary diesel engines, each direct coupled to 65 k.w. generators, for supplying current to the various electrically driven engine room and deck machinery. At sea only one of the auxiliary engines was required with about 55 k.w. load carried, which included that used for coffee urns, electric hot plate, etc.

### Beginning of the Voyage

The William Penn under management of the Barber Steamship Lines left New York September 3, 1921, stopping at Savannah to complete loading. The loading at New York consisted of case oil and barreled grease taken on at the Tidewater Oil Company's pier and miscellaneous cargo put aboard at the pier of the Barber Steamship Lines in Brooklyn. In Savannah cotton and barreled resin were loaded, the latter being placed on deck. The Penn then sailed to the Far East via Panama and Honolulu. At the latter place about 200 tons more fuel oil was put on to fill the tanks, so that it would not be necessary to purchase any additional oil at the higher prices prevailing in foreign ports.

The first severe storm was met between the 180th meridian and Yokohama. It necessitated slowing down the vessel to avoid loss of deck cargo. After calling at Yokohama the Penn proceeded to Kobe, Shanghai, Foochow, Swatow, Hongkong, Manila (where unloading was completed and she began loading for her return voyage), Cebu, Surabaya, Singapore (where she completed loading), Port Said, Marseilles, London, Rotterdam and Liverpool. A small amount of cargo was discharged at Port Said and the remainder at the last four ports. From Liverpool the Penn sailed March 6 for New York in ballast. She arrived March 19, having passed through some severe storms, the wind at times attaining a velocity of 110 miles an hour. On the return voyage she was not fully loaded, although her cargo was quite bulky, consisting of hemp, copra, rattans, tapioca, coffee, etc.

### Voyage of 197 Days

The total time required for the voyage, counting 24 hours to the day, was 197 days. The total number of days in port was 86, and the total time at sea 108 days. About 3 days was taken up in passing through the two canals at reduced speed, up rivers, etc., from pilot boats to piers, and standby at pilot boats, etc.

The mean sea speed from New York to London was 11.01 knots, with a mean consumption of 13.06 tons exclusive of donkey boiler. From Liverpool to New York, in ballast, the speed was reduced, due to the ship being in light condition and to the severe storms encountered, the vessel averaging 8.9 knots, with a mean consumption of 13.15 tons, exclusive of donkey boiler.

The best speed was made the last day out of New York, with 12.8 knots, and the main engines developing 4700 I.H.P., thus proving that diesel engines do not fall off in power at the finish of a long run, as is usual with the steam plant. Compression cards taken at this time showed that compression was normal in all cylinders.

The longest non-stop run was from Singapore to Suez, or 4943 nautical miles, requiring nearly 18 days, with a mean sea speed of 11.48 knots, and mean total consumption of main and auxiliary engines of 13.41 tons a day. The consumption an I. H. P., main engines only, and all purposes, was .3025 pound. The mean I.H.P. was 4130 and R.P.M. 107.9, with a draft of 21 feet 8 inches on leaving Singapore.

On leaving Savannah the draft was 26 feet 5 inches and the mean sea speed from Savannah to Panama was 11.6 knots, with a consumption for 24 hours of 13.81 tons, and a consumption an I.H.P., main engines, all purposes, of .3055 pounds.

### Auxiliary Engines' Consumption

In port when loading or unloading, with two or three auxiliary engines in operation during the day and one engine running for 24 hours, the consumption for the auxiliary engines was about 150 gallons a day, or .48 tons, which is from one-tenth to one-twentieth that for an equivalent steamer. When one engine was operated for the 24 hours, without winches in operation, as over holidays, the consumption was about 110 gallons a day. The consumption of the one auxiliary engine at sea was 120 gallons, or .36 tons. The donkey boiler takes from 160 to 170 gallons a day, or .52 to .55 tons, when in use.

The total consumption for the voyage was 1475 tons. It is estimated for a steamer the consumption would have been 4800 tons for the same trip, and it would have been necessary to purchase 3000 tons of oil abroad. It is figured that the motorship saved in cost of fuel alone from $60,000 to $70,000. On the outward voyage the deep tank was available for cargo, giving about 5 per cent greater carrying capacity than that of the equivalent sister ships. The lowest fuel consumption recorded was from Honolulu to Yokohama, with .29 pounds of oil an I. H. P., main engines, all purposes.

### Use of Lubricating Oil

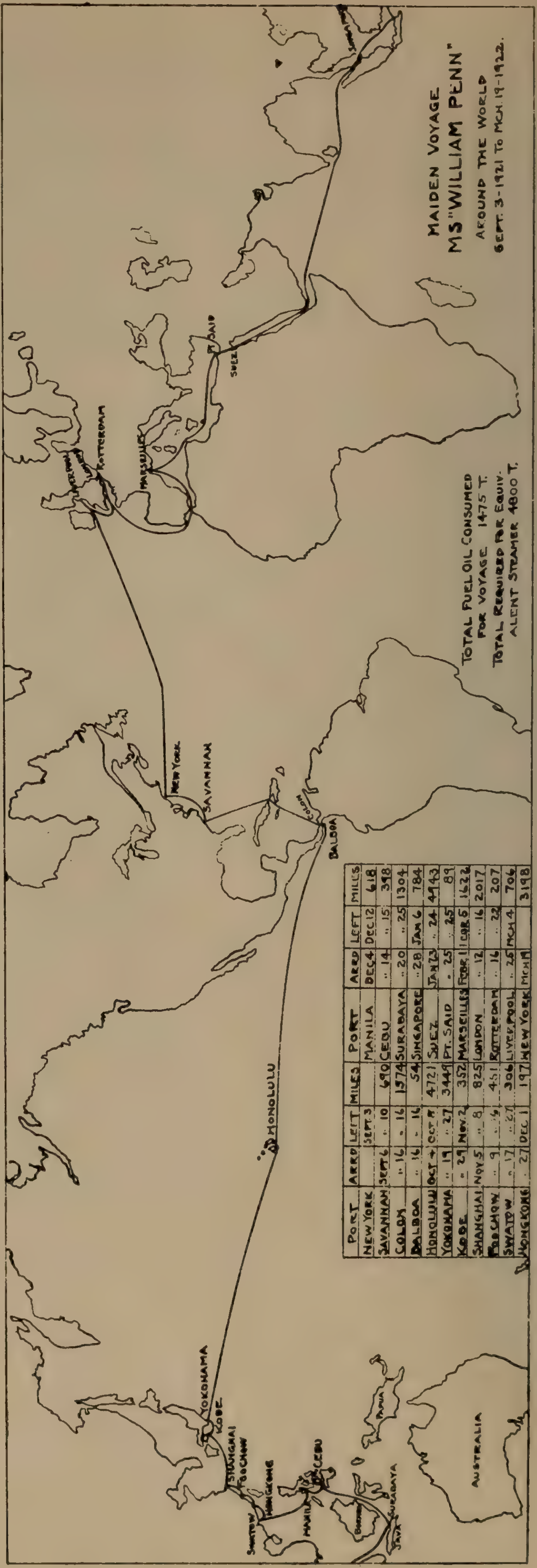
The lubricating oil required at sea for the whole plant, including main engines and auxiliary engines, averaged 15 gallons a day for the voyage.

The William Penn sailed the middle of April for the Far East again, carrying chiefly heavy or deadweight cargo, consisting mostly of structural steel, and with the vessel loaded down to the full draft marks. She is able to carry with this class of cargo about 1000 tons more than the equivalent steamer, representing the additional fuel and fresh water necessary to be carried by the steamer. Accordingly a much better showing should be made over an equivalent steamer on the second voyage.

### Diesel and Electric Drive Compared

A comparison with the electrically driven ship Eclipse is in order, but due to incomplete data available for the electrically operated ship a strict comparison is impracticable. The Eclipse from various voyages is reported to burn from 32 to 40 tons a day from bar to bar, depending on whether 19 or 24 nozzles on the turbines are open, and corresponding to speeds from about 9 to 10 knots. This works out at about 14.9 tons a hundred miles. The consumption a hundred miles for the motorship William Penn from bar to bar works out at 4.87 tons from Singapore to Suez, and 4.94 tons from New York to London. The William Penn burns only a small fraction of the amount consumed by the Eclipse in port. This does not appear in the above comparison. The comparison of the hulls is as follows:

| | Wm. Penn | Eclipse |
|---|---|---|
| Length, B. P. | 445 | 440 |
| Beam | 60 | 56 |
| Depth to shelter deck | 36.67 | 38 |
| Draft loaded | 28.39 | 28.58 |
| Displacement loaded | 17,100 | 15,700 |
| Deadweight | 12,375 | 11,867 |
| Cargo, cubic feet, grain | 627,830 | 589,355 |
| Cargo, cubic feet, bales | 593,910 | 552,969 |
| Designed speed | 11.5 | 11 |
| Designed R. P. M. | 108 | 100 |
| Designed power | 4,200 i.h.p. | 3,000 s.h.p. |



| PORT | ARR'D | LEFT | MILES | PORT | ARR'D | LEFT | MILES |
|---|---|---|---|---|---|---|---|
| NEW YORK | | SEPT. 3 | | MANILA | DEC 4 | DEC 12 | 618 |
| SAVANNAH | SEPT 6 | " 10 | 690 | CEBU | " 14 | " 15 | 398 |
| COLON | " 16 | " 16 | 1574 | SURABAYA | " 20 | " 25 | 1304 |
| BALBOA | " 16 | " 16 | 54 | SINGAPORE | " 28 | JAN 6 | 784 |
| HONOLULU | OCT 4 | OCT 7 | 4721 | SUEZ | JAN 23 | " 24 | 4943 |
| YOKOHAMA | " 19 | " 27 | 3449 | PT. SAID | " 25 | " 25 | 89 |
| KOBE | " 29 | NOV. 2 | 352 | MARSEILLES | FEBR 1 | FEBR 5 | 1622 |
| SHANGHAI | NOV 5 | " 8 | 825 | LONDON | " 12 | " 16 | 2017 |
| FOOCHOW | " 9 | " 16 | 451 | ROTTERDAM | " 16 | " 22 | 207 |
| SWATOW | " 17 | " 27 | 306 | LIVERPOOL | " 25 | MCH 4 | 706 |
| HONGKONG | " 27 | DEC 1 | 197 | NEW YORK | MCH 19 | | 3198 |

The Penn's voyage around the world

# THE COMMERCIAL ASPECT OF THE OIL ENGINE

## The Economic Value of Either Steam or Oil Engine is Almost Certain to Determine Its Future

By THEODORE LUCAS*

THE fundamental conception of any kind of mechanism in the form of the design, be it a steam engine, oil engine or any kind of working machine, settles its commercial future almost conclusively through manifold considerations that in combination settle its economic value.

For an oil engine plant, particularly of the marine type in large sizes, these considerations turn principally around the factors of—

First cost of investment and corresponding interest charges.

Fuel economy in quantity and cost.

Labor and attention needed to keep the engine running and thoroughly serviceable.

Maintenance and repairs.

Lubrication of cylinders and bearings.

Legal supervision and eventual restriction of installation and attendance; and other factors of minor importance.

### A Warfare of Types

Unlike the marine steam engine with its seasoned and settled course of development, which may be said to already include the recent phase of steam turbine engineering, the oil engine as applied to marine practice is anything but settled in its determination but is involved in an active warfare of types.

Of these the points of most heated controversy are presented by the difference between four-cycle and two-cycle types, between air injection or mechanical injection systems of fuel atomization, and now, soon to be between single-acting and double-acting cylinders and also trunk-piston or crosshead constructions.

In America it has been a sort of waiting game, watching the struggle between types, and rather following accepted and tried out practice of experienced European builders than to take much initiative upon our own account. This is rather surprising in some ways, as the very parallel engineering process of introducing oil burning for steam boilers has been pre-eminently successful in America, which leads virtually the entire world in the aggressiveness of conception and high engineering skill of execution of the modern system of mechanical oil atomization. This is so much more noteworthy and far-reaching in its economic results, as it tackled resolutely the severest end of the task, by successfully using the heaviest, high-asphaltic fuels of Mexican and Caribbean as well as Californian origin, which are in their residues of refining destined to be the cheapest and most plentiful form of oil fuel.

### Asphaltic Oils Logical Fuels

With the alleged soon-to-be-expected shortage of supply from domestic oils, these asphaltic fuels may sooner or later also be the logical fuels for American oil engines, and any engine that by construction could not well use these heavy, cheap fuels, but had to insist upon a higher priced and lighter fuel, perhaps also less plentiful in the market, would undoubtedly be handicapped to quite a degree.

If one views the large oil fields of the world, one can be but struck by the fact that oils of a heavy asphalt base seem to predominate and that a logical conclusion would be that motor shipping all over the globe ultimately will find these oils the most profitable ones to use and will continue to call, like the present oil-fired steamships, for bunker oil at the supply stations of the world.

Ruling out vaporizing or pre-combustion engines, the ability of the atomizing mechanism of an oil engine to use successfully the heavy boiler oils down to 16 degrees Baume will decide its claim upon superiority in fuel economy, perhaps not only in rate of consumption a b. h. p., but also final cost a b. h. p., fully considering special contingencies required by its use and being as such accepted by the shipping world. Every atomizing mechanism will then, in addition to being analyzed for the rate of fuel consumption per b. h. p., also be analyzed critically for its cost of installation, its ability to get along in actual hard sea service with the very minimum of easily rectified repairs or replacements as well as of attendance and manipulation.

### The Two Leading Systems

As well known, the two leading systems of purely physical atomization without chemical modification or distillation are: first, the air injection system introduced with and probably exclusively used by Diesel engines; and second, the mechanical injection system.

Of these the air injection system requires a large air-compressor with a power requirement of from 7 per cent to 10 per cent of the main engine, and with three-stage compression up to 1200 or even 1500 pounds a square inch; a very tender piece of machinery to keep in thoroughly good working order, aside from the fact that it represents a heavy investment with large interest as well as maintenance and repair charges. Air injection further requires a high or low pressure fuel pump and a delicate needle spray valve for each cylinder, which all require very high grade materials and the most excellent workmanship to make the mechanism fit for its exacting duty. Its performances under conditions near full load with reasonably good fuel are good, and may deliver one b. h. p. for 0.40 to 0.43 pounds of oil permanently and reliably. With quick changes in fuel, especially to heavy asphaltic, the apparatus is apt to give to the attendants a good deal of work, as they require careful supervision and frequent cleaning and overhauling.

The air-compressor and pumps with their many valves, the spray valves with their perforated plates, small bores and needle valve seats offer a great many opportunities for things to go wrong. Many engineers prefer to carry whole spare pumps and needle spray valves in order to be able to replace at a moment's notice the entire part with the least delay, but this is also an additional burden of investment.

### Disadvantages of Mechanical Injection

The mechanical injection has charged to its disadvantage the need for a rather excessive pressure, exerted, however, only on a liquid, the fuel oil, and not on air under high pressure. Hydraulic oil pumps with small plungers and valves are, even at 4000, 5000 or possibly 10,000 pounds a square inch, hardly more troublesome with the right kind of packing than the Diesel fuel pumps at 900 to 1000 pounds a square inch. An engineer of experience is nevertheless well aware that they are no happy-go-lucky, take-care-of-themselves pieces of mechanism, but require a very conscientious, skillful supervision and understanding.

A great advantage of the mechanical injection system is the absence of a high-pressure, blast-air compressor, with its high purchase cost, difficulty of maintenance and anxiety of supervision for the engineer. Its absence makes it necessary to install, or at least still maintain, a medium-pressure air-compressor for starting purposes, with sufficiently large storage tank capacity, but which runs only intermittently.

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*Member Society of Naval Architects and Marine Engineers.

Some systems of mechanical injection prefer to retain the needle spray valve for correct timing, which may be combined with individual pumps or a single pump feeding into an elastic air vessel-loaded system of pipes or one common fuel main.

### Needle Valve Dispensed With

Other systems prefer to dispense with the needle valve and to charge the fuel pump with the feeding as well as with the timing through means of an overflow or manipulated suction valve. At the nozzle end of the feed line provision is then usually made for one or two automatic check valves, to keep the nozzle from dripping after the timing period. Although these automatic check valves with their very desirable simplicity may be quite advantageous for two-cycle engines with their short periods of atmospheric or low pressure in the cylinders, it is doubtful if they profitably or safely can replace needle valves in four-cycle engines, because here in the long periods of exhaust and air admission an eventual oil leakage would have time enough to produce an explosive mixture, which in the correction of after-effect might prove many times more expensive than interest charges on needle valves and their operating gear.

So far as oil consumption of a mechanical injection system of modern, fully efficient type is concerned, it is sufficiently well established by continued English experience that it may be made fully equal to any air injection system. An unbiased professional analysis might rationally come to the conclusion that a mechanical injection system costs $1 to $1.50, where an air injection system costs $3, and that the former requires one hour of attendance to three hours for the latter system, while the oil economy is equal for both of them.

Even though small mechanical imperfections might be charged against one or the other, modern engineering skill is fully equal to the task of eliminating them without difficulty, but the fundamental difference of first cost and of attendance cannot be eliminated, and it is for this reason that one may safely predict that the commercial factors will unerringly decide after a short period of clarification for the cheaper and simpler of the two. One may but hope that American oil engineering will quickly see the handwriting on the wall and develop its own systems thoroughly suited to native fuels and conditions, of which none is more important than the attendance question under American marine laws, which are so anxiously concerned with the comforts of the seafaring employes.

Another of the most crucial points of commercial superiority will be sooner or later decided in the struggle between four-cycle and two-cycle engines. Here we are concerned only with fundamental differences that are more or less unalterable, while small engineering details can only temporarily delay the ultimate demonstration of superiority of one type or the other.

### Two-Cycle Cost Is Less

Assuming for the while that we can make the two-cycle engine equally powerful as well as economical in every stroke as the four-cycle engine is in every second stroke, then it is quite apparent to any commercial consideration that two cylinders of the two-cycle engine, turning out the same power as four cylinders of the four-cycle engine, will cost only about one-half as many dollars, and that the two cranks of a practically valveless engine will need surely only half the attendance the four cranks of a much-valved engine do. Space and weight are in about the same ratio, disregarding here the well known factors of legislation and registry regulations.

That the two-cycle engine at present is decried as uneconomical and weak is due entirely to its insufficient and more or less inefficient scavenging arrangements. This is, however, entirely an engineering question, where within the same limitations of cost, space, weight, lubrication and attendance we can produce a large number of varied constructions. This might be resolutely taken in hand from the standpoint of American originality, which sets itself the task of producing a scavenging system that will fill the cylinder 90 per cent full with fresh air at every stroke. As soon as this will be accomplished, then the fundamental factors will rapidly bring the question to a commercial conclusion.

A great argument against two-cycle engines is raised on account of their wastefulness in cylinder lubrication. As is well known, lubricating oil is usually introduced in the out-stroke against the least pressure at the coolest point. Although it works well in the four-cycle engine, the conditions in the two-cycle engine place the exhaust part near the usual oil inlet and offer thereby a great opportunity for an immense loss of oil through the exhaust. But modern oil pumps can readily introduce the lubrication oil near the top, where the rings cover the inlet, and by a small check valve prevent any waste or burning at other times.

### Success of German Motorship

The success in English hands of the originally German motorship Fritz with double-acting two-cycle oil engines, and the fact that German shipyards are assiduously approaching the task of making such double-acting engines a sea-going and sea-keeping commercial success, might be a warning to Americans that we cannot lag behind, that competition by German vessels, soon to be followed by English vessels of the highest type of commercial efficiency, may prove a very severe handicap to American vessels in the foreign, oversea trade, if they are powered only by a type of oil engine that Europe already puts into the discard as obsolete.

It is readily apparent that an engine of the Fritz type is on a par with or even superior to an ordinary triple or quadruple steam engine of modern reciprocating type in space, weight and simplicity with number of cranks, valve gear, auxiliaries, etc., and the cost is probably only in excess corresponding to a possibly increased power output. As is well known, oil engines of the highest type need much more high grade material and a much better grade of workmanship than the marine steam engine ever required. In the appended table this may vary from, say, $550 a ton for steam engines only to $700 or more a ton for oil engines, due to bronze or steel of a higher grade, more grinding, and careful fitting and assembling in valves, fuel needles, fuel pumps, etc. It is of course readily understood that local factors may alter such costs within wide limits, more pronouncedly now in the post-war time of readjustment.

In the last few years a marked stabilization has occurred in the auxiliaries of large ships and their driving power. After the example of a prominent European firm of oil engine builders, all auxiliaries are driven electrically, on deck as well as in the engine room. In steam engine times, however, we seldom or never attempted to drive circulating pumps, air pumps, etc., by anything but the same steam that the main engine received. Electrical machinery represents always a relatively large investment, while an introduction of direct oil engine drive for engine room auxiliaries would dispense immediately with a certain amount of generator capacity and with the motors entirely. With few exceptions the air compressors and different pumps in the engine room are reciprocating and very well suited to direct oil engine drive. The latter would also make the auxiliaries entirely self-contained and free them from dependence upon a generating set, in itself a source of possible breakdown and interruption of service.

The simpler direct drive by oil engines in the auxiliaries of the engine room would undoubtedly contribute to a reduction of cost, attendance, delay and interruption of steady service.

### Concerning Deck Machinery

The deck machinery is another matter, as here expediency of operation affects the idle time of the ship as a whole and thereby acquires a commercial consideration which is all its own and different from that for engine room auxiliaries. So we find a rapid introduction of electric winches, which seemingly prove very acceptable to shipowners.

When deck machinery was steam-driven a donkey boiler was formerly preferred on motorships, and this, then, also served the purpose of heating the ship either by direct radiators or by the thermo or similar systems. When the donkey boiler is abandoned by introduction of electric winches something else has to be found for heating purposes. Electric heating and cooking are used, but seemingly must be very high in first cost as well as very prodigal in current expenditure, as the efficiency of electric heating is usually charged with being low.

A commercial consideration that would make it its object to find a system of reasonably low first cost, with simplicity and cheapness of operation, might arrive at a combination of exhaust heat and electric heat, the latter as an auxiliary agent. The exhaust could be handled somewhat like a thermo system, but with an electric fan at the discharge end of the exhaust, sucking it from the main engines or a special supplementary furnace, toward and to a localized compartment system, supplying heated air to its territory. Electric heaters of small size could then fill in for very cold weather or carry the load when just a chill is to be taken off. For cooking purposes exhaust gas could take the duty up for all boiling, water heating, steam (or now gas) tables, while for frying and broiling the electric appliances could well serve at reasonable economy.

Recent development of small scale oil burners applied to household purposes have proved a fair success, and in somewhat modified form, they could be well utilized as mechanical atomizers with high economy of investment and operation as well as with safety on board ship for heating and cooking purposes.

Recently much attention has been devoted to the methods of applying oil engines to marine propulsion. Aside from the direct drive so well known from steam engine practice, geared drive and now lately electric drive are also eagerly discussed.

### Direct Drive Best

Of these the direct drive will always remain the best of marine propelling systems.

Steam turbine practice has taught the marine world that a geared drive can be made quite a serviceable proposition. The accompanying table of comparisons shows that even in first cost it may be somewhat superior to the direct drive. But when the question of maintenance and repair as well as attendance is considered, its high speed, doubled number of cylinders and cranks, delicate gears, etc., must run up these cost items markedly above those of the direct drive.

The table also shows that the first cost of an electric drive is likely to be 50 per cent more than the direct drive, and that undoubtedly high speed engines and a large amount of electrical machinery mean at least twice as much maintenance, repair and attendance cost. The suitability of the electric drive to warships does not hold good in the operation of merchant ships and it seems sometimes as if a sort of fad determines the selection of this system.

A recent yacht installation had two Diesels at 225 r. p. m. and one propeller at 220 r. p. m., and a marine engineer can but wonder about the immensely increased efficiency gained thereby.

The Great Lakes seem to afford a characteristic example of the attitude of the shipowners toward oil engine installations. Nowhere can one detect the so fervently desired eagerness to accept the rosy anticipations of many oil engine advocates.

Is it possible that the attached table gives an explanation why this eagerness is lacking with shrewd, successful business men and vesselowners? If so, possibly America had better quit watching and waiting for Europe and solve its own problems in best harmony with the special native conditions.

### APPROXIMATE COMPARISON OF MARINE PROPELLING PLANTS.

| | 4500 I. H. P. or 3400 B. H. P. | Weight in gross tons with water (without water) | Estimated mean cost per ton | Estimated total cost |
|---|---|---|---|---|
| I. | Steam plant. Single screw | (840.0) | $450.00 | $378,000.00 |
| | T. Exp. engine with boilers (sea) | 960.0 | ............ | .................. |
| | " " " " " (lakes) | 860.0 | ............ | .................. |
| | | (740.0) | 450.00 | 333,000.00 |
| II. | Diesel engines. Twin screw, each 6 cyl., 4 cycle, single acting (as given for M. S. Wm. Penn) 29⅛"x45¼"x100-110 R. P. M. | 911.0 | 700.00 | 637,700.00 |
| IIIa. | Mech. injection. Single screw, 4 cyl., 2 cycle, double acting, 29"x45"x100-110 R. P. M. | 550.0 | 600.00 | 330,000.00 |
| IIIb. | Mech. injection. Single screw, single reduction gear to 2 engines, each 6 cyl., 2 cycle, double acting 18"x20"x220 R. P. M. | 410.0 | 700.00 | 287,000.00 |
| IIIc. | Mech. injection. Single screw, electric transmission from 2 engines each 6 cyl., 2 cycle, double acting 18"x20"x220 R. P. M. | 630.0 | 750.00 | 472,500.00 |

# A MISSISSIPPI RIVER CAR FERRY

## Vessel Will be Operated by Missouri-Illinois Railroad Company Between Kellogg and Little Rock*

THE Charles Ward Engineering Works of Charleston, West Virginia, has received a contract from the Missouri-Illinois Railroad Company for the construction of a steel side-wheel car-ferry to be built from plans and specifications prepared by Cox & Stevens. The vessel will operate on the Mississippi near St. Genevieve between Kellogg and Little Rock. The dimensions of the ferry are: length over all, 285 feet; breadth of hull, 54 feet; breadth over guards, 86 feet; depth of hull, 11 feet.

The hull will be of steel of the modified scow-type, the sections at the bow to be given as much dead rise as possible to divert the drift. Rudders, of which there are two, will have skegs and will be kept within the limits of the transom for protection. The ferry is of the three-track type, designed to carry ten loaded cars of 82 tons each on a draft not to exceed five feet, and in addition it is to be sufficiently strong to permit carrying on the center track a locomotive of 160 tons.

In designing the hull Cox & Stevens gave particular attention not only to securing sufficient rigidity and structural strength but also to producing a hull of as simple construction as possible, with good drainage, as it is so built that all portions of the hull are accessible and easy of upkeep. There is a continuous plate girder the full depth of the hull under each track and there are ten transverse bulkheads, which, together with the disposition of shapes and plates entering into the hull proper, form a strong and rigid structure.

### Designed for Short Haul

This ferry being designed only for a short haul, first cost and maintenance charges were considered of greater importance than the maximum economy when under way, which resulted in the choice of simple engines and modified river type boilers. Paddle wheels will be of 28 feet diameter with a width of 12 feet and will be driven by simple engines of the river type with 22-inch cylinders and 8-inch stroke. The boilers, of which there will be six, will be each 44 inches in diameter, 26 feet long, having ten 6-inch flues and are designed for 200 pounds pressure. Boilers and engines will be located on deck, housed in for protection from the weather, the house being constructed of light angles and galvanized steel. The paddle wheels will be aft of the center of the ferry and the boilers and stacks forward of amidships, as are also the navigating bridge and pilot house, the ferry to be equipped with electric light plant, steam steering gear, four deck capstans and the necessary number of chocks, cavils and cleats.

The builders will deliver the completed vessel to the owner in the early fall.

It is interesting to note that, although the construction of vessels for use on salt water is extremely slack, there is a continual increase in the demand for and construction of river equipment of all types. Unquestionably, the problem of transportation on the inland waterways of the United States and the possibilities of saving the cost for rail transportation by this means are receiving most careful attention, with the result that great improvements are being made in the type, character and efficiency of these river craft.

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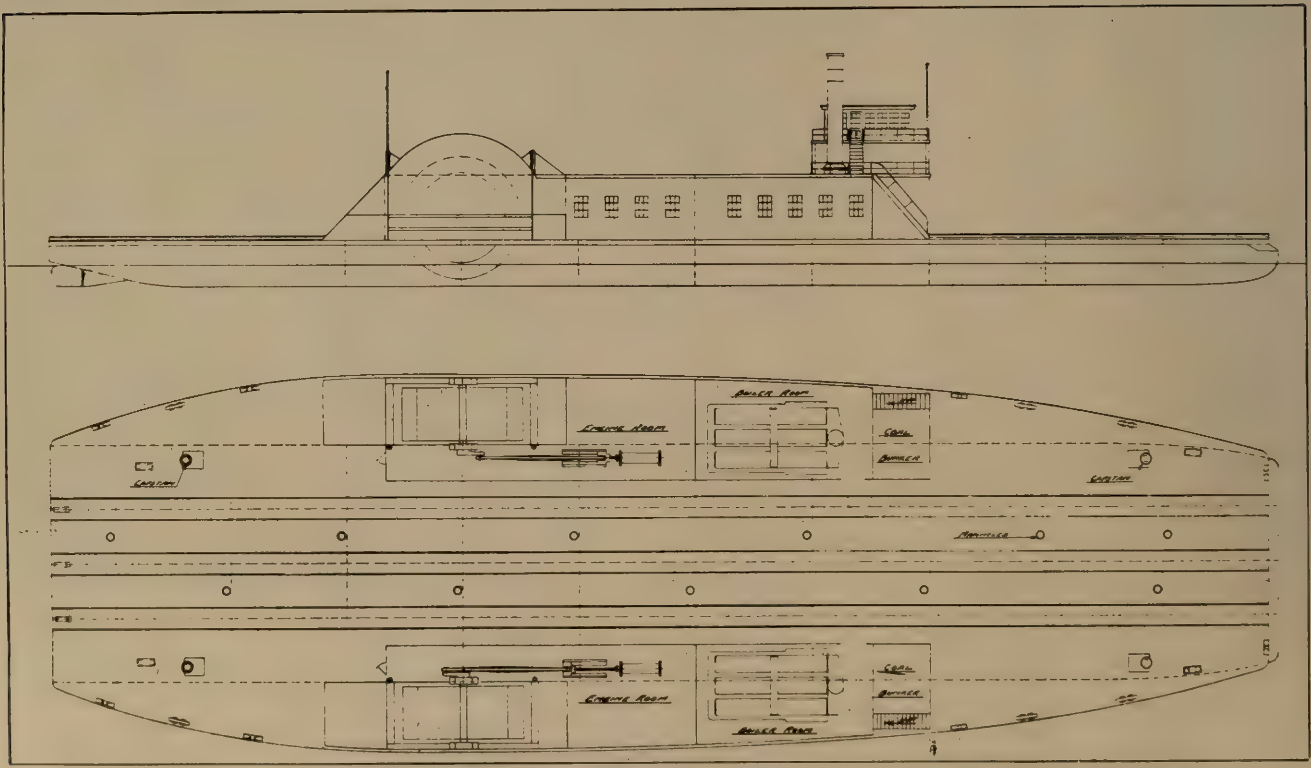
*Cox & Stevens are designers.



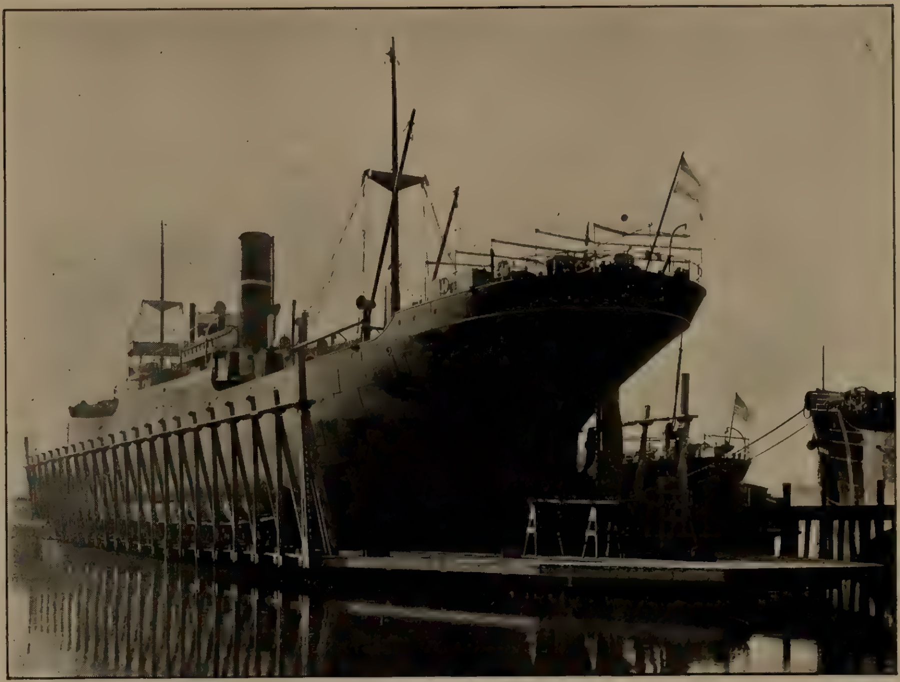
A Three-track Car Ferry being built for the Missouri-Illinois Railroad Company by the Charles Ward Engineering Works

# NORFOLK'S NEW RAILWAY DRYDOCK

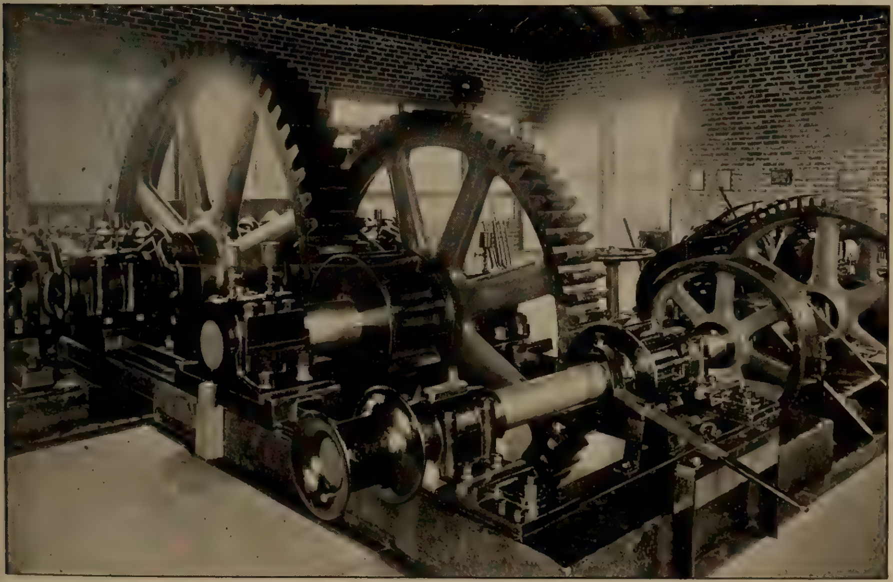
THE increasing popularity of large railway drydocks for repair yards is becoming quite noticeable. Low first cost and economy of operation are factors which are of great importance in repair yards where operating cost must be at a minimum in these times of keen competition. Railway drydocks were originated and developed entirely by the Crandall Engineering Company, drydock engineers, Boston, and their predecessors. Beginning in 1854 they have constantly studied, analyzed, designed and improved until the modern railway drydock was evolved as a result of their untiring efforts. Today over 95 per cent of the railway drydocks of this country are of their design. Today the actual lifting capacity in weight of all Crandall railway drydocks in operation totals over 150,000 tons.

One of the most recent railway drydock installations is that of Colonna's Shipyard, Inc., Norfolk, Virginia. This dock has a lifting capacity of 5000 tons of actual weight and will lift 10,000-ton to 12,000-ton deadweight capacity steamers. It is the largest railway drydock on the Atlantic Coast and the largest commercial drydock in the port of Norfolk.

It is built to Crandall standard for this capacity. The track is of the four-way type, of sturdy timber construction, heavily bolted and braced, resting on a foundation of yellow pine piling driven to refusal and accurately cut to the proper gradient. The track is railed with flat steel plates of width and thickness designed to give maximum lifetime. The cradle moves along the track supported on connected free rollers so proportioned and spaced as to give minimum friction.


The steamship Larenberg on 5000-ton Crandall Railway Drydock at Norfolk. Note clear deck, which gives easy and ready access to ship

The cradle that actually carries the ship is also of heavy yellow pine timber construction. The length over the keel blocks is 360 feet, which with a fantail 20 feet gives an overall length of 380 feet. The width over-all is 70 feet with 63 feet in the clear between the uprights. At mean high tide ships can be docked drawing 14 feet forward and 19 feet aft. The cradle is built up aft by columns and heavy bracing so that the keel blocks conform to the usual slope of the ship's keel when in light condition, thus avoiding any distortion or stress to the ships. On each side of the cradle are uprights supporting a docking platform conveniently located for handling lines and centering ships when being docked. On this platform are located the hand winches for pulling the bilge blocks against the ship. The bilge blocks are of the patent releasing type, enabling one man to readily release and replace a bilge block under full load.


Electric hoisting machinery of Norfolk dock

The cradle is operated by six hauling chains of open-link type attached to the cradle by an equalizing gear which assures the stresses in the several chains being always the same. These chains are operated by a powerful hoisting machine electrically operated, enabling a full capacity ship to be drydocked ready for repairs in 45 minutes. The machinery is of special design with heavy gearing and shafts. It is equipped with an automatic brake which stops the machine, in case the electric circuit is broken. Taken altogether, this dock represents the latest development in railway drydock design and is proving ideal in operating economy.

# TWO DIESEL TRAWLERS

## Heavy-oil engines as against distillate will save Western California Fish Company $30 a day for each boat

THE Western California Fish Company, Otto Weisich, manager, 556 Clay street, San Francisco, is keeping pace with the rapid development in the use of diesel by placing an order with the Atlas Imperial Engine Company for two three-cylinder 125-horsepower mechanical-injection diesel engines for ocean trawlers. For several years the Western California Fish Company has been using steam trawlers as the main units in its fleet, but has found that departing from steam equipment and building new diesel-powered boats would be to its advantage.

The contract for the hulls has been placed with W. F. Stone & Son, Oakland, California, who have an enviable reputation as shipbuilders. The vessels will be 64 feet 6 inches long by 16 feet beam and 7 feet 6 inches draft.

### Dependable Power Plants Necessary

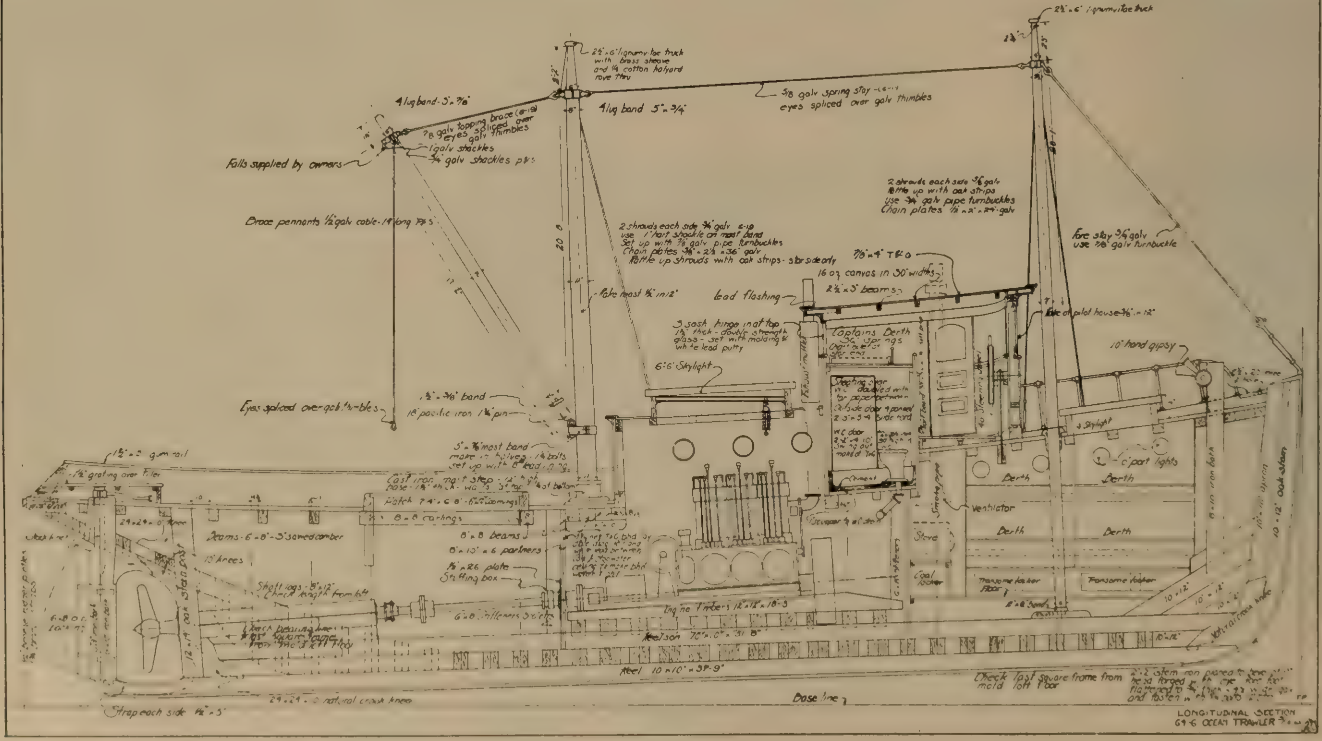
The requirements of an ocean trawler working out of San Francisco Bay are strenuous. The vessels leave the docks about 3 o'clock in the morning, go through the Golden Gate before daybreak, and work their way to sea to some location favorable for casting their nets, the place depending on the season of the year and the weather. The vessels return in the evening, often after dark, with their catch. They go every day, rain, shine, fog, blow or calm, and consequently have to be seaworthy and have dependable power plants.

The Atlas Imperial diesel engines were selected for the power plants because of this company's many years of experience in powering vessels of this class and the excellent record of this company's diesel engines.

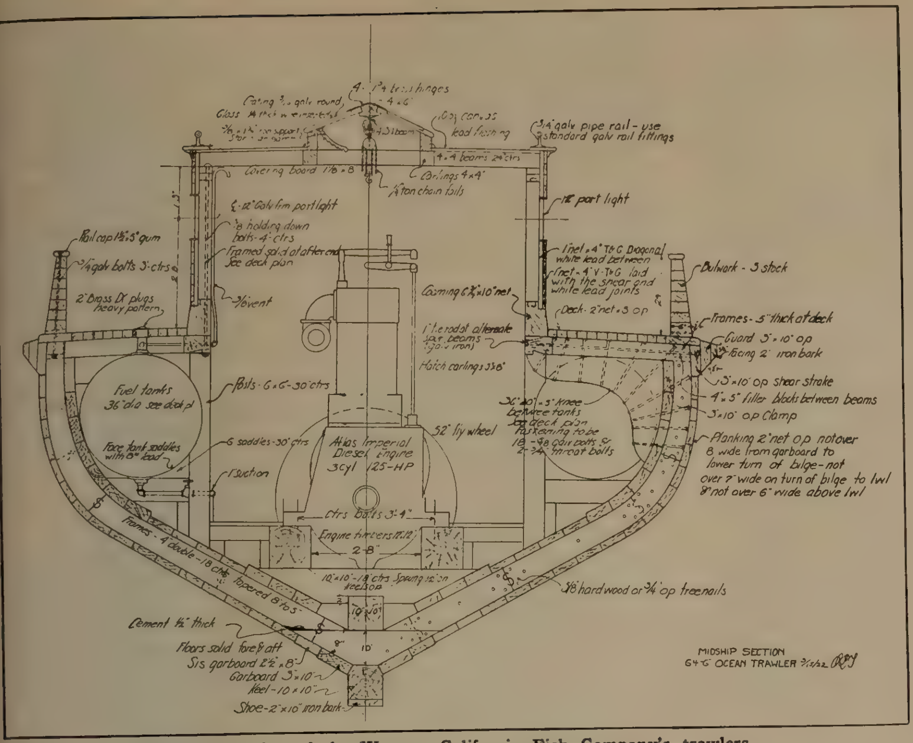
### Operating Expense Small

Plans of the vessels accompanying this article show the sturdy construction adopted. Several changes are made from the usual type of construction. Two watertight bulkheads are built forward and aft of the engine room, making three compartments. The galley is arranged in the forecastle, which has a raised deck to give an abundance of room. The stove in the galley keeps the quarters of the fishermen warm and dry. The galley stovepipe passes through the pilothouse for heating purposes. The entrance to the galley is from the port side of the deckhouse, and a skylight is placed in the forecastle head to give ample light in the quarters. A comfortable berth for the captain is arranged in the pilothouse over the deckhouse entrances.

The small operating expense is an attractive feature of the Atlas vessels. The 125-horsepower engine will consume less than 6½ gallons of fuel oil an hour, at a cost of 4¼ cents a gallon on San Francisco Bay, or a total cost for fuel of 27½ cents an hour. This is a saving of approximately $2.45 an hour over the use of a distillate engine of the same power and a saving of about $30 for each day's trip.


2½" × 6" lignum-vitae truck with brass sheave and ¼ cotton halyard rove thru
4 lug band 5" × 7/8"
7/8 galv topping brace (6-19) eyes spliced over galv thimbles
1 galv shackles
¾ galv shackles pins
Falls supplied by owners
4 lug band 5" × ¾
5/8 galv spring stay (6-19) eyes spliced over galv thimbles
2½" × 6" lignum-vitae truck
Brace pennants ½ galv cable - 14 long
2 shrouds each side ¾ galv 6-19 use 1" hart shackle on mast band Set up with 7/8 galv pipe turnbuckles Chain plates ⅜ × 2½ × 36" galv Rattle up shrouds with oak strips - stbd side only
2 shrouds each side 5/8 galv Rattle up with oak strips use ¾ galv pipe turnbuckles Chain plates ½ × 2" × 24" galv
Fore stay ¾ galv use 7/8 galv turnbuckle
7/8 × 4" T&G
16 oz canvas in 30" widths
2½ × 3" beams
Rake mast ½" in 12"
lead flashing
Rake of pilot house ⅜" in 12"
3 sash hinge in at top 1½" thick - double strength glass - set with molding & white lead putty
Captains Berth 36" springs
10" hand gipsy
6'6" Skylight
1½" × ⅜" band
18" pacific iron 1⅜" pin
Eyes spliced over galv thimbles
5" × ⅞ mast band make in halves - 1¼ bolts set up with 6" lead lining
1½" × 5" gum rail
1½ grating over tiller
Cast iron mast step - 12" high base - 1½" thick - walls ¾" top
Hatch 7'4" × 6'8" - 6 × 2 coamings
8 × 8 carlings
Beams - 6 × 8" - 3" sawed camber
8" × 8 beams
8" × 10" × 6 partners
10" knees
⅝" × 26 plate
Stuffing box
Shaft logs - 8" × 12" Check length from loft
6 × 8 stringers
12 × 14 oak stern post
Sheathing over W.C. doubled with tar paper between
Outside door 4 paneled 2' 3" × 5' 4" 1⅜" hard
W.C. door
Cement
Smoke pipe
Ventilator
Stove
Coal locker
c' port lights
Berth
Berth
Berth
Berth
Transome locker
Transome locker
Floor
4 Skylight
40 Steering wheel
Engine Timbers 12" × 12" × 18'-3
Keelson 10" × 10" × 31'-8"
Keel 10 × 10" × 39'-9"
10 × 12"
10" × 12"
10 × 12" oak stem
8 × 10 iron bark
24 × 24 × 0 natural crook knee
Strap each side ½" × 5"
Check last square frame from mold loft floor
Base line
LONGITUDINAL SECTION
64-6 OCEAN TRAWLER

Inboard profile of Western California Fish Company's trawlers under construction by W. F. Stone & Son. They will be powered with Atlas Imperial diesel engines



Midship section of the Western California Fish Company's trawlers

# About People

**R. J. Ringwood,** recently manager of the operating department of the Shipping Board, is now freight traffic manager of the Pacific Steamship Company, headquarters, Seattle. He is in charge of the coastwise and intercoastal freight traffic departments. **Hugh Gallagher** has been appointed assistant general manager of the company with headquarters at San Francisco. **E. G. McMicken,** formerly general passenger agent of the company, is now passenger traffic manager with headquarters at Seattle. **S. E. Duff** of Seattle succeeds H. S. Eaton as assistant district manager of the company, San Francisco. **H. S. Eaton** assumes management of the Portland, Oregon, office. **G. B. Fonda** is now dock agent at Portland, Oregon, succeeding **F. N. Bush,** who will be the Portland manager for Sudden & Christenson.

**M. J. Buckley,** former assistant to A. J. Frey of the Shipping Board, has been appointed assistant freight traffic manager of the Robert Dollar Company, San Francisco.

**Carlos de Zafra** has been elected president of Seabury & de Zafra, Inc., marine engineers and vessel brokers, New York, succeeding Charles L. Seabury, deceased. **Robert L. Sim** was elected to the board of directors.

**Oliver S. Corbell,** formerly with the Shipping Board at Los Angeles, has opened a general steamship ticket office, 248 Sixth street, San Pedro.

**William Wickersham,** custom house broker of San Pedro, was recently elected president, Maritime Exchange, Port of Los Angeles. Permanent offices were established at Los Angeles and San Pedro May 1.

**William H. Todd** was recently elected president of the Mobile Plant, Todd Shipyards Corporation. Arthur E. Goddard is first vice-president; John D. Reilly, secretary-treasurer; John F. Butler, assistant treasurer. Directors are: William H. Todd, Arthur E. Goddard, David Lanman, James H. Lyons, H. Hartwell and Angus Marshall.

**W. E. Martin** has been placed in charge of marine work of the Westinghouse Electric & Manufacturing Company on the Pacific Coast with headquarters at San Francisco. Mr. Martin was trained in electrical engineering at the University of Colorado, and has been with Westinghouse since 1915. He is a member of the A. I. E. E. and of the Society of Terminal Engineers.

**M. Watanabe,** until recently manager of the Seattle branch, N. Y. K., is returning to Japan to accept a higher position and will be succeeded by **T. Ishizawa,** until recently in charge of the N. Y. K. office at Tientsin. A dinner was given M. Watanabe, on his departure, by the foreign trade bureau of the Seattle Chamber of Commerce.

**David Leeming** has been elected president of the Victoria, B. C., Shipowners, Ltd., succeeding Captain M. D. Harbord. **A. G. Ligertweed** is vice-president. It is said that the executives will urge the government to terminate the affairs of the company.

**William M. Allan,** formerly connected with Rithet Consolidated, Ltd., is now general agent in Victoria, B. C., for the Admiral Line. **Leslie Pelling** of the same former connection, becomes assistant to Mr. Allan.

**E. A. Mills,** heretofore local manager of the Luckenbach Line at Los Angeles, has been promoted to be district manager. **R. S. James** has received a similar promotion at Seattle.

**W. J. Love,** vice-president of the Shipping Board in charge of traffic, has announced the assignment of territory to representatives of the Inland Offices Division of the traffic department:

**J. T. Smith,** manager, Detroit; Michigan, except Upper Peninsula. That part of Ohio north of a line (east to west) through Columbus (not including Columbus and Zanesville). That part of New York and Pennsylvania west of a line drawn from Buffalo through Pittsburgh and thence to the Pennsylvania-West Virginia state line (including Buffalo and Pittsburgh).

**R. J. Whitmire,** manager, Minneapolis: Minnesota, Iowa, North and South Dakota, Montana, Wyoming, Washington, Idaho, the Upper Peninsula of Michigan and that part of Wisconsin north of a line drawn from La Crosse to Green Bay (not including Green Bay).

**T. Frank Hay,** manager, St. Louis: That part of Illinois, Indiana and Kentucky, south of a line drawn from Moline, Illinois, east to Indianapolis (including Moline and Indianapolis) and west of a line from Indianapolis south to the Ohio River and thence to the Kentucky-Tennessee state line; the entire state of Missouri, exclusive of Kansas City and St. Joseph.

**J. D. Houston,** manager, Memphis: Tennessee, Arkansas, Mississippi, Louisiana, Alabama, Georgia, North and South Carolina, Florida and Texas, except that part of Texas covered by the Kansas City office.

**G. M. Bush,** manager, Kansas City: Kansas, Nebraska, Colorado, Oklahoma and that part of Texas east of a line, Denison to Houston, including Dennison and Houston.

Managers of the Chicago and Cincinnati offices remain to be appointed.

# THE MANUFACTURE OF SEAMLESS TUBING—II

## A Century of Experience and the Latest Scientific Methods Applied to Manufacture of Seamless Tubing

By PHILIP DAVIDSON*

METALS and alloys, strange as it may seem, are subject to ailments resembling those suffered by human beings. It sometimes happens that a manuactured article made of brass will leave the factory in an apparently perfect condition, but upon aging it will develop cracks that may be serious enough to destroy the usefulness of the article. This is known to the trade as "season cracking," and is caused by the development of numerous fine intercrystalline cracks due to the action of excessive unbalanced strains that have been introduced by cold working in the process of manufacture. Metallographic investigations in recent years have thrown new light on the causes of season cracking, and modern manufacturers have taken steps toward preventing this very objectionable condition.

Some impurities, in very small amounts, when introduced during melting, will sometimes segregate along the crystal boundaries in the form of a brittle skin or film and will injure the ductility of the alloy and cause it to fracture along the crystal boundaries. Ordinarily, metal broken in tension will break across the crystal boundaries unless the fracture is made at an elevated temperature.

Some alloys absorb an excessive amount of gas during melting and retain it in the metal. As a result gas pockets are formed, which are flattened out during cold rolling, and are apt to make trouble later when the metal is subjected to cupping and forming operations. Again, dross and dirt, which are introduced into the melt from using unclean scrap, are sometimes retained in the cast metal and later may injure the finished product, as they form the starting points where corrosion begins.

### Why Condenser Tubes Fail

Condenser tubes would last indefinitely if they neither season cracked nor corroded. In the past perhaps the most serious losses in condenser tubes were due to season cracking or splitting. Such a condition represents an unnecessary loss in service because it is the result of improper manufacturing methods and can be prevented. Figure 7 represents a season cracked condenser tube. The longitudinal edge section of this tube as shown under the microscope is illustrated in Figure 8. The dark irregular lines are cracks, which apparently follow the crystal boundaries. This particular tube is of the muntz metal type and contains approximately 60 per cent copper and 40 per cent zinc. You will note from the micrograph that its structure is different from that shown in Figure 2 (Pacific Marine Review for May) by the fact that it is made up of oval shaped gray crystals imbedded in a matrix of white material. The gray crystals are known as alpha, while the white in this case is beta. This duplex structure is characteristic of ordinary muntz tubing, which is a hot working alloy. It may be appropriate to mention here that Scovill tubing will not season crack.

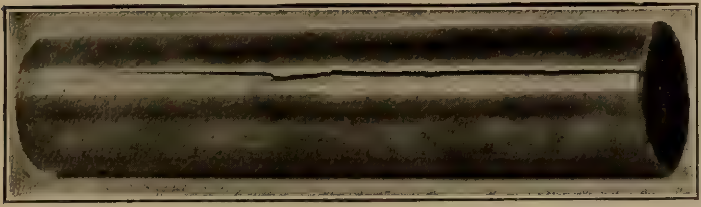


Figure 7

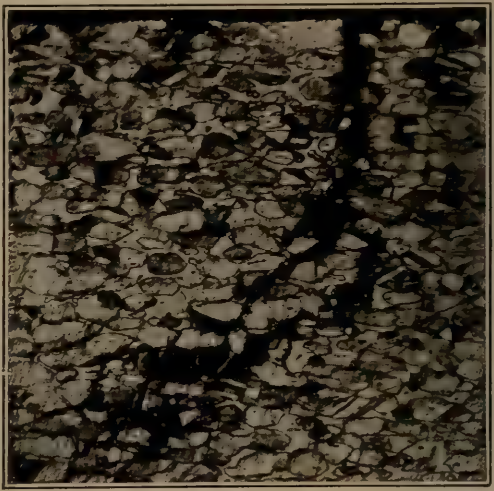


Figure 8

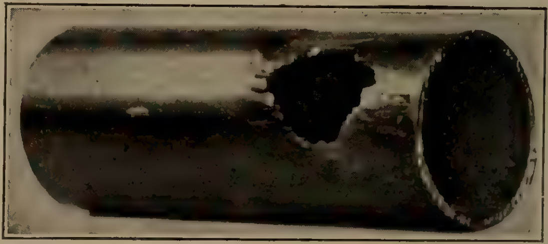


Figure 9

The greatest menace to the life of condenser tubes is corrosion or decay. As is the case with the living organisms, metals must also constantly battle with the elements. Nature intended that the stable form of metals should be in the condition of salts or oxides. This natural tendency to revert to their stable form is known as corrosion and is stronger in some alloys than in others. A corroded tube is easily recognized, because it is really in a diseased condition. Instead of strength and ductility, which formerly characterized it, it is now very weak and brittle. Such a tube can be easily broken with a hammer or in a vise, the resulting fracture being copper colored. Figure 9 shows the tube as we see it. The version of the story as given out by the microscope is shown in Figure 10. This is perhaps better illustrated in Figure 11, which

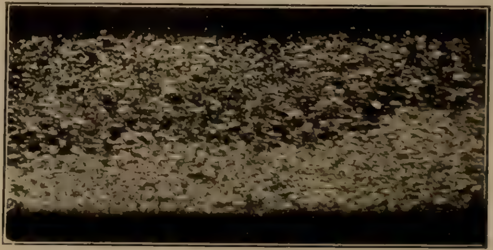


Figure 10

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* Metallurgist, Scovill Manufacturing Company.

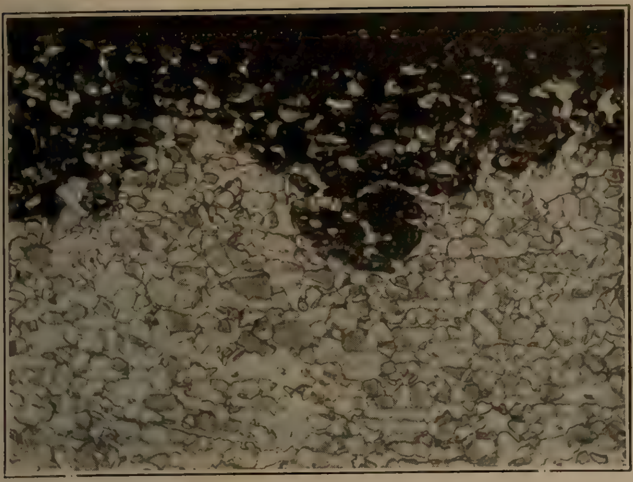


Figure 11

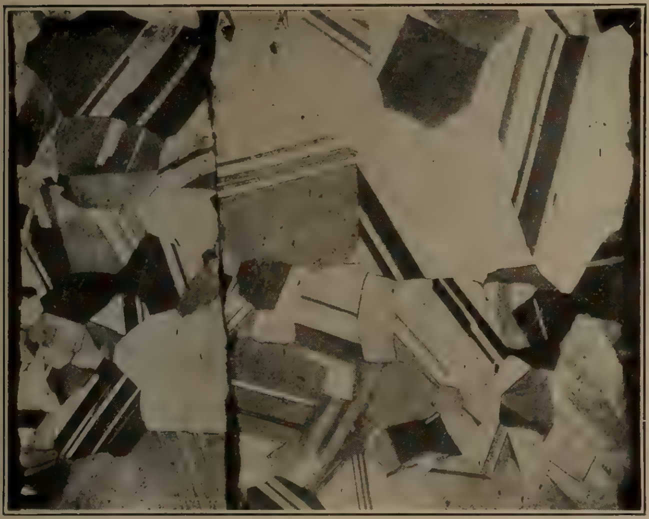


Figure 12

represents the character of a corroded muntz tube under higher magnification; the lower portion shows the characteristic duplex alpha (gray) beta (white) structure. The dark granular mass shown in the upper portion is the corroded or dezincified area. If you will examine this micrograph very carefully you will note that only the beta constituent had been attacked, and had been replaced by a porous mass of copper, its zinc content having been dissolved away. A condition showing such severe corrosion indicates that this particular alloy, which disintegrates on account of the decomposition of one of its constituents, is not suitable to resist corrosion, and should not be used for this purpose. It will be shown later how admiralty tubing made by the Scovill cupping process is designed to meet severe corrosive conditions.

### Metal Cast Unsound Makes Poor Tubing

Condenser tubes may develop leaks after being in service only a short time. This is sometimes due to the presence of internal flaws in the metal, such as is illustrated in Figure 12, which represents the structure of an admiralty condenser tube that failed on account of leakage. This tube had been made from an unsound casting. Besides the large gas pocket represented by a vertical line near the middle of the micrograph, the crystals are extremely large, indicating that the metal is very soft, too soft in fact to stand up against government specifications for compression. A gas pocket once produced in the casting, unless it is cut off, is retained throughout because subsequent cold working flattens and elongates it but does not close it up. Such imperfections are apt to be found on the inside wall of tubes made by the cast shell process, because unsound portions present on the inside surface of the cast shell are difficult to remove by scraping or machining. It will be shown later how unsound metal is eliminated in admiralty mixture condenser tubing made by the cupping process from sheet metal.

It pays to use good clean material in casting if only for the following reason: condenser tubes sometimes fail on account of pitting, which is often attributed to the presence of dross and dirt in the metal. Such a case is shown in Figure 13, which represents the longitudinal wall of a pitted tube. The dark granular material represents the dirt inclusions, and pitting is apt to begin in such places. Figure 14 shows an advanced stage of pitting, the entire defective area having practically been corroded away, leaving behind it a cavity resembling a decayed tooth. Such a cavity or pit increases in size until the tube leaks and must be replaced. It is essential, moreover, that the tube wall should be smooth and clean inside so that corrosive solutions will not find a resting place where they will carry on their work of destruction.

Seamless tubing is generally made by casting a heavy walled tube or hollow billet and later drawing it down to the required size. The usual procedure is to remove or scalp the outside surface on a machine resembling a lathe, and to leave the inside surface practically untouched, because it is a difficult place to get into. In some mills the cast shells are drawn as they are, without scalping, through a die and over a plug on a tube draw bench. Although this process is usually confined to cold working mixtures, nevertheless a large number of plants are still turning out copper and muntz metal tubes by the cast shell process.

The cast shell method has the following disadvantages. Poor unsound metal will draw up on a tube bench almost as well as good stock; the existing flaws present in the interior of the tube wall may not be discovered until the tube is in service. Again, surface defects present on the inside of the finished tube may later be the cause of pitting and ultimate leaking but

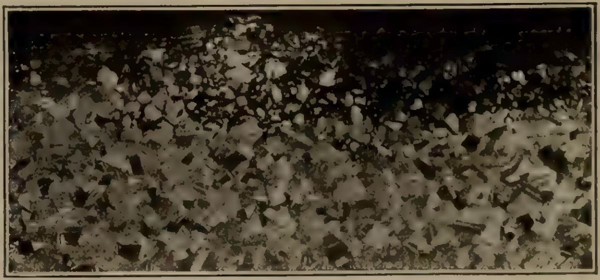


Figure 13

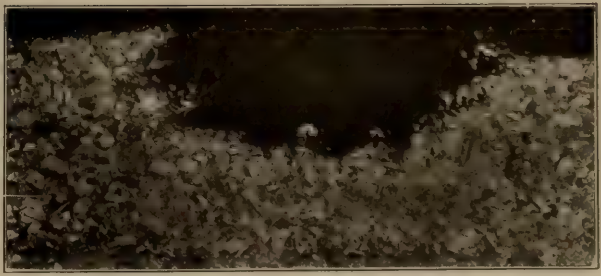


Figure 14

may not be noticeable when a new condenser tube is inspected. Unfortunately a surface examination by the most skilful inspector will fail to reveal the true character or quality of the metal. This can only be ascertained by a metallographic examination of a longitudinal edge section under a microscope.

### Cupping Process for Making Admiralty Tubes.

The Scovill process of cupping sheet metal and later drawing the cups into tubes represents the latest advance in the art of making seamless tubing. The reason why this method was not adopted long ago can be explained by the fact that besides a tube mill equipment, it is necessary to have a rolling mill and extra powerful cupping and drawing presses. For this purpose the Scovill Manufacturing Company has a complete unit consisting of the latest design of casting shop, a fully equipped rolling mill and a heavy brass manufacturing department.

Since the Scovill Company makes its admiralty condenser tubing (copper 70 per cent, tin 1 per cent nad zinc 29 per cent) to conform with all of the specifications set down by the United States Navy, only the purest of materials are used. The raw materials are carefully weighed and are melted under the best possible conditions in order that the melt should not absorb an excessive amount of gases and should not lose too much zinc by volatilization. The molten metal is then cast into bars, which are later trimmed on the alligator shears to remove any unsound metal. Samples are then taken from each heat and are analyzed for copper, lead, tin and iron. The lead and iron exist as impurities and must be kept as low as possible. Only metal that conforms to specifications is used in the manufacture of Scovill admiralty tubing.

After having their surfaces milled to remove imperfections, the bars are rolled to the required thickness. Large discs are then cut from the rolled brass bars, and carefully inspected on both surfaces and on their edges, and are later cupped on powerful presses. This cupping operation is so severe that only metal that is absolutely sound will make perfect cups; otherwise the bottom of the cups will appear checked, or, if the metal is very bad, it will be pushed through. Tubes made by this process are just as good on the inside surface as they are on the outside because the metal is clean on the surface, and are much more sound internally than tubes made from a cast shell. Besides this they are more dependable in gauge because they are more nearly concentric. The cups are then annealed (heated to a red heat to remove the hardness induced by the cold working) and are redrawn a sufficient number of times to fit them for draw bench operations.

In order to maintain a uniform, dependable product, every annealing operation must be carefully controlled. All of the annealing muffles are equipped with both indicating and recording pyrometers and every effort is made to keep the operations standard. At regular intervals, samples are examined under the microscope in order to check up the heat treatments.

The finished tubes are then straightened, cut to length, carefully inspected both inside and outside for the presence of imperfections, and are gauged for dimensions and concentricity. Each tube is then subjected to a hydrostatic pressure of 1000 pounds a square inch and to an air pressure of 80 pounds a square inch in order to make sure that they are sound mechanically. Compression and flattening tests are also performed.

Applying a Hydrostatic Pressure of 1000 pounds a square inch on Every Condenser Tube

Scovill admiralty tubing has a remarkable structure when seen under the microscope. Its grain is exceedingly fine and uniform in size. This fine dense structure, coupled with the fact that the metal is homogeneous and free from casting defects, offers the greatest resistance to corrosion. Scovill condenser tubing has remarkable stiffness and yet it can be flattened upon itself without cracking. It will stand a remarkable degree of expansion and can be twisted without showing any distress. Its high degree of elasticity and its entire freedom from drawing strains make it immune from season cracking.

### Special Muntz and Copper Tubing.

The same care and knowledge which are applied to the manufacture of Scovill admiralty tubing are used for the making of Scovill special muntz condenser tubes and Scovill copper tubes. Instead of drawing tubes from the cast shell, as is still being done by some mills, Scovill Manufacturing Company treats the hot working mixtures in the following manner. First a large billet is cast and later trimmed to remove casting defects. Suitable sections are then cut off and are heated to redness. These billets are then extruded through a die at an enormous hydraulic pressure into the form of rods. The extruded rods are then inspected for the presence of flaws, cut to the required length, and are again heated to redness. They are then hot pierced on a Mannesman machine or made into heavy gauged shells which are later drawn into tubes on the draw benches. That these double hot working treatments impart wonderful physical properties to the metal can be judged from the tests which can be applied to the finished tubes. Hot working not only refines the structure to a remarkable degree, but it also makes it more dense by closing some of the very fine holes that are often found in cast metal.

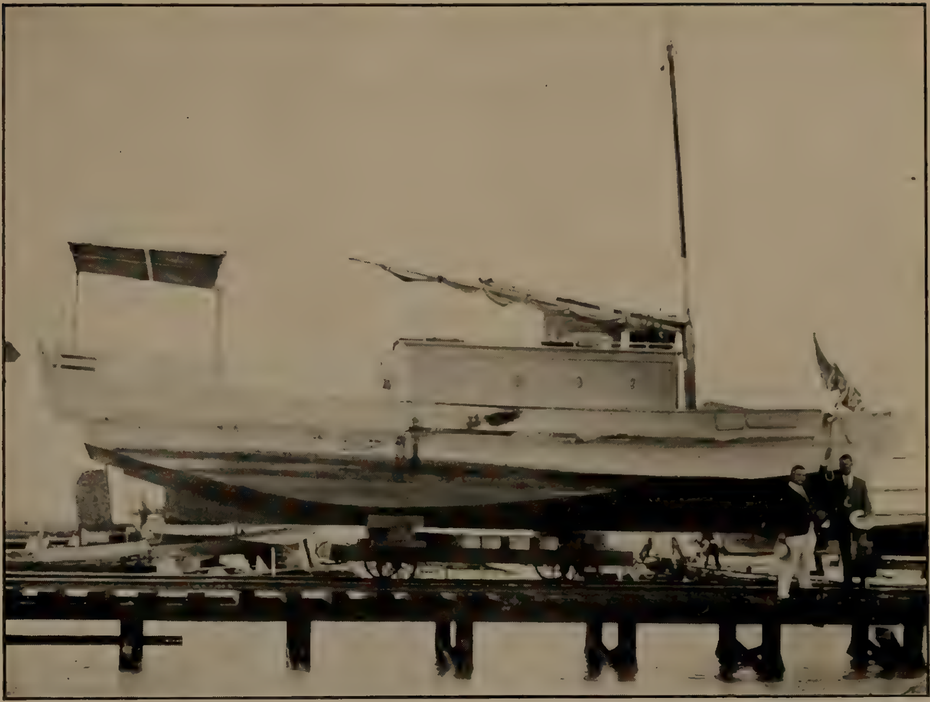
The same fine uniform grain structure so characteristic of Scovill admiralty, has been imparted to Scovill muntz condenser tubes so that their structures are almost identical. Scovill special muntz condenser tubing can be flattened, twisted, expanded, and compressed. In fact, it can pass successfully all of the physical tests required for admiralty condenser tubes by the United States Navy. It has a high resistance to corrosion, but of course it does not equal the admiralty alloy in this respect. For fresh water conditions, it will outlast ordinary muntz tubing and will not season crack.

Copper tubing made by the Scovill double hot working treatment is very dense and sound and is admirably suited for heaters, distillers and other requirements where the best quality copper tubing is needed. Its remarkable strength and ductility can be judged from the fact that it will stand flattening, expansion and twisting.

# FISHING IN HAWAII

By H. A. B. SNEVE*

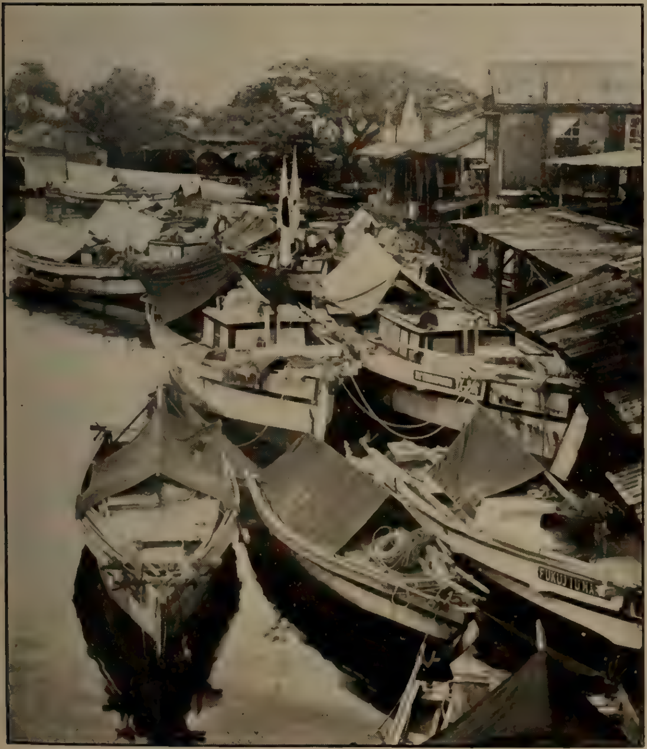
SO far as is known, everyone in Hawaii who knows Howard W. Laws applauded when the new administration appointed him as fish and game commissioner of the Territory of Hawaii. A fisherman, sportsman, successful business man and a good fellow make a combination hard to beat. One of the accompanying photographs shows Mr. Laws' sampan on the ways at the Kewalo Marine Railway, of which Mr. Laws is president, and beside him is Joseph H. Futerer, his business associate and secretary of the Kewalo Marine Railway. For the success of this venture Mr. Futurer is largely responsible as he has long since convinced the majority of commercial fishermen who make Honolulu their home port that the service given at the Kewalo ways is second to none in Hawaii.


Howard Laws and Joseph Futerer on the Kewalo marine railway. The sampan is Mr. Laws'

The other photograph is self-explanatory to all who have visited Hawaii. It is of typical Japanese sampan fishing fleet, this particular photagraph being taken by M. Nakamura at Hilo, who with I. Kitagawa and K. Matsuno caters to the commercial fishing trade at Hilo.

### Sampans Crude but Seaworthy

Though these sampans may appear crude and simply constructed (as they are) yet they make up for this by far in their unquestionable seaworthiness, which is a first consideration when one is put at the mercy of Kona storms. These gales have played havoc with many a craft and its crew, composed generally of two or three men on the smaller boats and from five to twelve men on the larger. Practically all the sampans are motor-powered, and though they are without superfluous equipment, everything from gear to anchor is generally of the best material obtainable. The smaller sampans usually make daily trips to sea, as do some of the larger sort, depending on the kind of fish they go for, but usually the larger craft stay out at sea about a week. The sampans staying out for more than two days are loaded with ice.



Japanese sampans at their moorings

The fishing grounds are about the different islands, boats of one island making frequent trips to the other islands. The large sampans out of Honolulu travel hundreds of miles toward Midway island, staying out to sea for from three to five weeks. The fish caught are mostly of the mackerel family, the gamest of these being the ulua, which weigh generally around a hundred pounds and have a delicious dark red meat.

### Japanese Fishermen Predominate

Although a few Hawaiians and Chinese make up some of the fishing crews, the majority of the fishermen are Japanese and are amusingly superstitious. This fact particularly impressed the writer when he left Hilo on a sampan one evening just before dusk and returned shortly after sunrise the following morning. The two most amusing superstitions are that a woman never must step aboard a fishing boat and that only bare feet must be set thereon—never a foot shod in shoes or sandals aboard. If their adherence to these superstitions has much to do with their catches, it is well, for "they surely bring home the fish." But I should rather believe that the very evident presence of their gear having come from Weeks-Howe has more to do with their success than the absence of women.

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*Traveling Representative Weeks-Howe-Emerson Company.

# RADIO CORPORATION'S REPORT

THE trans-Atlantic circuits of the Radio Corporation of America are now carrying 20 per cent of the international message traffic between the United States and Europe, it is stated in the annual report of the corporation to the stockholders. Out of a gross income of $4,160,844 in 1921, the corporation made a net profit of $426,799, which was applied against reserves for depreciation of patents. This amount, in the opinion of the directors, was inadequate. The balance sheet as of December 31, 1921, shows a book value for the common stock of $2.11 a share. The corporation has outstanding 3,955,974 shares of preferred stock (par value $5) and 5,732,000 shares of common stock of no par value.

"The year 1921," the corporation reports, "was largely devoted to increasing the efficiency and capacity of our existing communication channels and to extending, through present European correspondents, connections with other countries by wire telegraph, and thus there has been provided indirect service to almost the entire world, except South America."

### Six Direct Circuits

Six direct international radio communication circuits are now in operation by the Radio Corporation of America: Great Britain, opened on March 1, 1920; Norway, opened on May 17, 1920; Germany, two circuits, the first opened August 1, 1920, and the second May 19, 1921; France, opened December 14, 1920; Hawaii and Japan, opened March 1, 1920.

"At the beginning of 1921," the report states, "your corporation had in operation two trans-Atlantic high-power transmitting stations, one at New Brunswick, New Jersey, and the other at Marion, Massachusetts. The station at Tuckerton, New Jersey, originally constructed by a German company, was of unsatisfactory design to meet the demands of trans-Atlantic service. The reconstruction of this station by the Radio Corporation of America made it ready for commercial traffic in January, 1921. The Tuckerton station now furnishes two transmitters for use on two distinct European circuits. At Radio Central, Rocky Point, Long Island, construction work commenced during the previous year was completed to such a point that on November 5, 1921, the station was officially opened. When completed this station will be a multiple station of twelve units, each consisting of a complete transmitter, and an antenna nearly one and a half miles long, supported by six steel towers, each 400 feet in height." The first unit of Radio Central was formerly opened by President Harding. The message was acknowledged by nineteen countries.

### Stations in South America

The installation of high-power stations in South America has been inaugurated by joint arrangement with the French, German and English companies, under which the interests of the four companies are trusteed, with an American chairman chosen by the Radio Corporation of America. A station is now being erected in Argentine, and a concession has been obtained and financial commitments made in Brazil. At Warsaw, Poland, the Radio Corporation of America is now erecting a high-power station. One-half of the necessary radio equipment has been forwarded to Poland from the United States, and American engineers are making the installation.

The new receiving station for trans-Atlantic radiograms is at Riverhead, Long Island, where the one antenna consists of two copper wires nine miles long strung on telephone poles, and receives simultaneously messages from Norway, England, France and Germany.

For communication with ships on the Atlantic and Pacific six marine radio stations are now in operation: Chatham, Massachusetts; Siasconset, Massachusetts; New London, Connecticut; New York; Cape May, New Jersey; and San Francisco. As a result of the erection of radio telephone broadcasting stations in various parts of the United States, the Radio Corporation reports a very great demand for radio telephone receiving apparatus.

### 1921 Operating Account

The corporation's operating account for 1921 shows gross income from transoceanic communication, $2,138,625; from sales, $1,468,919; from marine service, $533,298—a total of $4,160,844.

New San Francisco office of the Toyo Kisen Kaisha at 549 Market Street

# PACIFIC CONFERENCE RATES

As of May 15

The following rates, quoted by the conferences that govern different trades of the Pacific Coast of the United States and Canada, are published as a matter of information. They are accurate for the date given above; but, as frequent changes may occur, shippers in all cases should verify the quotations. All rates are in gold dollars, unless otherwise indicated. At the head of each table appears the standard used, whether 100 pounds or long or short tons. The following symbols are employed: W, weight, 2000 or 2240 pounds, depending upon the trade; M, measurement, 40 cubic feet; W/M weight or measurement, ship's option; BM, board measure, 1000 feet. Only the important rates are quoted. When two rates are shown thus: Lumber.......... (10)............BM 9.00, in bold type, a change has been made since the last report. The rate in parenthesis is the old and that on the right is the new.

## Intercoastal

**Eastbound:** Atlantic Intercoastal Conference.

(100 pounds)

| | |
|---|---|
| Canned goods | .50 |
| Dried fruit | .55 |
| **Lumber, open; about (13) BM** | **12.00** |
| Flour | .35 |
| Wool (greasy, in bags) | 1.25 |
| Wool (greasy, comp'd bales) | .90 |

**Westbound:** Atlantic Intercoastal Conference.

(100 pounds)

| | |
|---|---|
| Steel | .60 |
| Tinplate | .50 |
| Hardware | 3.50 |
| Dry goods | 4.00 |
| Shoes | 3.25 |
| Furniture ($20 value) | 1.80 |
| Cotton piece goods | 2.65 |

## Gulf

**Eastbound:** Pacific Coast - U. S. Gulf Eastbound Conference.

(100 pounds)

| | |
|---|---|
| Canned goods | .50 |
| Dried fruit | .55 |
| Lumber | BM 18.00 |
| **Flour (.55)** | **.35** |

**Westbound:** U. S. Gulf Intercoastal Conference.

(100 pounds)

| | |
|---|---|
| Soil pipe | .50 |
| Naval stores | .75 |
| Furniture | .75- 1.25 |
| Agricultural implements | 1.25 |
| Hardware | 1.56 |

## Cuban

**Eastbound:** Pacific Coast - Cuban Eastbound Conference.

(100 pounds)

| | |
|---|---|
| Beans | .75 |
| Canned goods | .74 |
| Cement | .75 |
| Flour | .75 |
| Dried fruit | 1.00 |
| Rice | .75 |
| Lumber | BM 18.00 |

**Westbound:** No cargo.

## South American, West Coast

**Southbound:** Pacific Coast - West Coast South America Conference.

(Short tons)

| | |
|---|---|
| **General (20.00)** | **W/M 18.00** |
| Lumber, prin. ports | BM 18- 20 |
| Flour | W 14.00 |
| Wheat | W 15.00 |
| Asphalt | W 11.00 |
| Cement | W 10.50 |
| **Canned goods (20.00)** | **W/M 15.00** |

**Northbound:** Pacific Coast - West Coast South America Conference.

(Long tons)

| | |
|---|---|
| General | W/M 10.00 |
| Nitrate | W 6.00 |
| Ore | W 5.50 |
| Cocoa beans (2000 lbs.) | W 15.00 |
| H. W. logs | W/M 15.00 |

## South American, East Coast

**Southbound:** Pacific Coast - East Coast South America Conference.

(Short tons)

| | |
|---|---|
| General | W/M 20.00 |
| Lime | W/M 10.00 |
| Agricultural implem'ts | W/M 10.00 |
| Canned goods | W/M 14.00 |
| Cement | W 6.50 |
| Steel | W 10.00 |
| Lumber— | |
| Pine, 100 M up | BM 17.00 |
| Pine, less than 100 M | BM 20.00 |
| Fir | BM 15.00 |

**Northbound:** Pacific Coast - East Coast South America Conference.

(Long tons)

| | |
|---|---|
| Fertilizer | W 6.50- 8.00 |
| **Coffee (Bag, 1.00), short ton** | **15.00** |
| Hides | W 12.00 |
| Wood extracts | W 9.00 |

## Trans-Pacific

**Westbound:** Pacific Westbound Conference; U. S. S. B. Trans-Pacific Outward Conference.

(Short tons)

| | |
|---|---|
| General | W/M 16.00 |
| Steel | W 5.00 |
| Lumber— | |
| Ordinary | BM 12.50 |
| Squares | BM 11.50-12.50 |
| Logs | BM 17.50 |
| **Flour (W 5.00)** | **open** |
| Oils | W/M 5.00 |
| Salmon | W/M 12.00 |
| **Milk (10.00)** | **W 6.00** |
| Copper-lead-spelter | W 5.50 |
| Asphalt | W/M 5.00 |
| **Rice (W 5.50)** | **open** |
| Malt | W 15.00 |
| **Sugar (12.00)** | **W 10.00** |
| Cement | W 5.00 |
| **Wheat (5.00)** | **W 7.00** |

**Eastbound:** U. S. S. B. Trans-Pacific Conference, Homeward Committee.

(Short tons)

| | |
|---|---|
| General— | |
| **China (17.50)** | **W/M 15.00** |
| Japan | W/M 10.00 |
| Manila | W/M 12.50 |
| Rattan furniture— | |
| Shanghai | M 6.00 |
| Hongkong | M 3.00 |
| Hides, dry— | |
| Shanghai | M 12.50 |
| Hongkong | M 12.50 |
| **Japan (10.00)** | **M 12.00** |
| Hides, green, Hongkong | M 17.50 |
| Wool, Japan | M 10.00 |
| **Seeds, Japan (9.00)** | **W 4.00** |
| **Hemp, Japan (bale 1.00)** | **W/M 10.00** |
| Vegetable Oils, Japan— | |
| **Bulk (7.00)** | **W 7.50** |
| Gunnies | M 8.00 |
| Unshelled walnuts | W 13.00 |
| Shelled walnuts | W 10.00 |

## Australasia

**Southbound:** Pacific Coast - Australasian Tariff Bureau.

(Short tons)

| | |
|---|---|
| General | W/M 20.00 |
| **Machinery (15.00)** | **W/M 20.00** |
| **Lumber (14.00)** | **BM open** |
| Lubricating oil | W/M 7.00 |
| Case oil (case) | .35 |
| Canned goods | W/M 15.00 |
| Steel | W 11.00 |

**Northbound:** Pacific Coast - Australasian Tariff Bureau.

(Long tons)

| | |
|---|---|
| General | 105/- |
| Coal | W 5.00 |
| Wool, greasy | £1-3/8 |
| Sheep skins | £1-1/4 |
| Sausage casings | 160/- |

## European

**Eastbound:** Informal Conference.

(Long tons)

| | |
|---|---|
| General | W/M 20.00 |
| Canned goods, 100 lbs. | .65 |
| Barley-wheat | 37/6- 42/6 |
| Lumber | BM 90/- |
| Dried fruit— | |
| Strapped, 100 lbs. | .80 |
| Bags, 100 lbs. | .70 |
| Beans-peas, 100 lbs. | .90 |
| Rice, 100 lbs. | .60 |

**Westbound:** Rates fixed in Liverpool; fluctuating.

# MORE WAR IN THE PACIFIC

HAD an original inspiration prevailed, this paragraph, introductory to a general survey of trans-Pacific rate affairs, might have appeared in 4½ point, light face, or in some type of equal unobtrusiveness. As the acknowledged source of that account of the rate imbroglio, Peace in the Pacific, in the May issue of Pacific Marine Review, my natural aversion to launching boldly forth again in 9 point Century will be readily appreciated. Generous and understanding souls will also spare a sympathetic thought when they learn that no sooner had that joyful story of peace gone out through shipping channels than an ominous rumbling was heard, a sound of ever increasing volume, that reverberated and boomed along the Northwest Coast, echoing the announcement that peace overtures had failed and the battle was still on.

During May a meeting of trans-Pacific traffic officials was held at Portland, Oregon. Peace overtures were presented and accepted by Frank Waterhouse & Company, China Mail, Furness, Withy & Company, Robert Dollar Line, Admiral Line, Canadian Government Merchant Marine, Java Pacific, T. K. K., O. S. K., N. Y. K., Mitsui, Suzuki and Y. K. K. Representatives of the United States Shipping Board were present and gave assurances of their participation in the organization when all trans-Pacific lines were represented in it. The Canadian Pacific was also present, but declined to affiliate until it had had communication with officials at Montreal. Blue Funnel was not represented, and the Portland meeting adjourned until the United States Shipping Board and other conciliators could have the opportunity to enlist the membership of that line and the Canadian Pacific.

In justice to the Blue Funnel it must be said that, although averse to rate alliances, it has invariably upheld tariffs and has the reputation of keeping its word; but in justice to the cause of peace, to which we adhere, Blue Funnel must accept responsibility for an attitude which, as has happened in the past, will militate against the desirable results to be secured from a fully representative organization.

The answer of the Montreal office of the Canadian Pacific is not available, if indeed a reply to the invitation to enter the conference exists. During March of this year the Canadian Pacific retaliated against the sporadic rate-cutting of other lines by declaring all rates open. In the absence of other information to the contrary, it must be presumed that the implied challenge still stands. When the trans-Pacific conference was a unit, it is said that the Canadian Pacific ruled the Puget Sound membership, which in turn through numerical superiority ruled the entire body. The formation of local organizations in Portland, Seattle and San Francisco has changed that situation; local organizations now have control of local and non-competitive commodities and a voice in naming rates on transcontinental or competitive shipments. The thoughtful logician may here deduce the cause of trans-Pacific lumber being "open" from Puget Sound at an average rate of not much more than $8 a thousand feet or of flour being reduced to $4. It is certain that the Canadian Pacific could have had peace had it so desired, and, aside from the theory that it did not approve of the terms outlined in the armistice program, it is urged that the C. P. will continue to remain independent until certain lines which it believes to be superfluous or inefficient are eliminated. In the meantime the condition on the Sound is one to make strong men weep and to strain the resources of the most opulent.

On the Columbia River skies are brighter; although conditions on the Sound find their reflection in the Portland territory, the hue is not so dark and the fighting is less fierce. As an example: the United States Shipping Board has about three million feet of lumber fixed from the Columbia River for June shipment at $10 and about half that amount during the same month for $12. If there has been any considerable lumber accepted from that territory at $8, we have not heard of it, while the lower rate is very common farther north. The recent conference in Portland had the tendency to bring traffic executives there closer together, with better rates a natural consequence.

The San Francisco conference is in active operation and, although desultory sniping is reported, conditions are decidedly better than at any other Pacific Coast port. Slightly lower rates are reported on a few commodities, while canned milk has been reduced from $10 to $6. It is expected that the San Francisco conference will function efficiently, within its limits, but will be powerless to act in a normal capacity until the final adjustment of Pacific Coast contentions is perfected.

The activities of the Shipping Board on the side of peace have ceased. This organization, which has so often acted as an intermediary in evolving solutions and soothing sore spots, will now await overtures from belligerents or anxious neutrals; and when those petitions for peace are made they must be accompanied by something more substantial than protestations of future unimpeachable conduct. A substantial cash bond must be posted in lieu of the olive branch. The bond to be required is not intended to offend or impugn the honor of those who have before entered so many gentlemen's agreements, but rather to focus their minds on the provisions of the agreement, heretofore so elusive, yet so productive of incipient hostilities. The U. S. S. B. feels that a cash bond will serve as an all-season memory tonic, providing reasonable assurance against lapse, and it does not seem troubled over the provisions of the Sherman Act in this conection. It is noteworthy that the Blue Funnel, which has so steadfastly held aloof from conference affairs, has often expressed itself in favor of the cash bond as the foremost requisite of a model agreement. Other lines are reticent in this regard.

In reviewing the situation a conference secretary says: "Prospects are bright for the early formation of a Pacific Coast conference, with three local secretaries, located in Seattle, San Francisco and Portland, respectively, and with a general secretary for the organization as a whole." A show-down is the inevitable prelude to a workable conference," says a Shipping Board official. A freight executive declares: "It has reached the sniping stage; they are weary and wind-blown, the end is near." Another volunteers the "low down" (which evidently means whispered information): "The rate war will cease when certain inefficient operators are forced out."

# THE CHARTER MARKETS

## Beyfuss Freight Report

San Francisco, May 16, 1922.

There has been no great change in general chartering conditions since our report of four weeks ago.

Grain to Europe: Several steamers have been fixed for full cargoes of wheat to U. K. or Continent for August/September loading at the reported rate of 37/6. Parcel space for wheat, which had been booked as low as 30/-, recorded quite an appreciable advance and a good many round lots have been closed, up to 35/-@37/6 for May/June loading, but this active demand has now ceased and space is worth about 35/-. Barley for May/June/July has been booked at 35/- and a few lots at 37/6, and one parcel is reported for a special continental port at 40/-.

Lumber to the Orient again has shown little change. Rates are still ruling between $9 and $10, but occasionally we hear of some "distress" freight being closed at less than these figures.

The lumber market to the West Coast of South America has shown some activity, a small foreign steamer having been closed on a lump sum basis that figures out less than the regular liner's rate, which is still strong at $18. Several sailing vessels also have been reported fixed at about $17.

South Africa took one large sailing vessel cargo, which is reported at $22.50 for two ports.

A steamer is reported fixed for June/July loading at $15 a thousand from Puget Sound and/or British Columbia to Calcutta.

Two cargoes of Cuban sugar are loading this month for British Columbia. One steamer is reported receiving $7 for early May loading and the second $6.50 for later loading.

Otherwise there is nothing new to report except the sale of two large cargoes of gasoline to the United Kingdom, which are going forward in American tank steamers.

C. BEYFUSS CO., Brokers.

## Page Freight Report

San Francisco, May 15, 1922.

Since our last report under date of April 18, rates on space for grain from the North and San Francisco have advanced gradually from 30/-, U. K. and usual Continental range, to 35/-, and then at the present writing to 37/6 for June/July loading, with the prospect of further improvement. For early August some space has been fixed for barley for Dunkirk at 40/-. The Northern Grain & Warehouse Company has chartered the German bark Tamara XII at 40/- to load wheat from Portland, and also the bark Harald for the same business, but the rate on this fixture is not stated. The same charterers have taken the British steamer Ben Rinnes for wheat from Portland. Further fixtures in full cargo lots are the British steamers Largo Law at 37/6, the Cape Ortegal and the Dutch steamer Ootmarsum, all to load wheat from the North. Neither the rates nor the names of charterers have been disclosed. A Japanese steamer for May/June loading has been placed at 37/6 for wheat, but charterers are not named.

The situation as regards full cargo movements in lumber shows no improvement. The Norwegian steamer Adour is fixed to take lumber to two ports West Coast of South America at a reported lump sum freight of $35,000, the Bank Line Transport & Trading Company being the charterers. The schooner Minnie A. Caine has been chartered by Otis, McAllister & Company to load lumber from the North Pacific to Callao, terms private. The Norwegian steamer Tosca has been taken by the Canadian Trading Company for a full cargo of lumber from British Columbia to Melbourne, private terms, and for Sydney the barkentine S. F. Tolmie is reported fixed for the same business by the British Columbia Mills Timber & Trading Company at a rate of $13 Canadian currency. The barkentine Chas. F. Crocker will make two trips with lumber to Honolulu at a rate of $11 a thousand feet, Alexander & Baldwin being the charterers. The East Asiatic Company have chartered the ship Moshulu for lumber for two ports in South Africa, Capetown / Delagoa range, at $22.50 a thousand feet, and a steamer has been taken by the Pacific Export Lumber Company for a full cargo of ties for Calcutta, terms private.

James Rolph & Company chartered the West Mahwah for coal from Newcastle, N. S. W., for the Hawaiian Islands and Pacific Coast ports, terms private.

The schooners Meteor and Sophie Christenson have been taken by Balfour, Guthrie & Company to load nitrate from Chile to Honolulu at a rate of $5 a ton.

The schooner Forest Home has been reported chartered for Behring Sea business by the Behring Sea Packing Company on a bareboat basis at a rate of $600 a month.

The schooner Henriette is fixed to bring back a full cargo of copra from the Solomon Islands to San Francisco at $11 a ton, and schooner Alert has been fixed for the same business at $12 a ton. The Willapa Lumber Company has chartered the steamer Agwistar to load lumber from the North Pacific to New York at $12 a thousand feet.

PAGE BROTHERS, Brokers.

## Australasian and Oriental

Australasian - European business continues to show marked strength. All in all, it is probably the best in the world, ratio of tonnage to cargo being considered; and not even a heavy influx of tonnage has weakened the market. Says Birt & Company's bulletin for February, the last received up to the middle of May: "It is evident that, notwithstanding the large amount of tonnage available on the Australian berth during February for the United Kingdom and Continent, there has been a continuance of the improvement in the freight market as reported in our January issue. Wool, wheat and flour have been offering freely, together with several large parcels of copra, and some small shipments of tallow have been shipped. Insulated steamers, owing to the Tasmanian apple export season being in full swing, have had only limited space available for meat, especially as, owing to a record season, large quantities of butter and cheese are offering for immediate shipment, for which sufficient tonnage is not immediately available. Eastern steamers still report sufficient cargo available for all requirements."

Japan reports strength in the demand for small steamers for "near-sea" use. About the middle of April 1000-ton vessels were commanding yen 5; 3000-tonners yen 3; those of 5000 and 6000 tons yen 2; 7000 and 8000 yen 1.50, and over 10,000 yen 1. At the end of April coal charters were ranging as follows: Moji-Hongkong, yen 3.70; Moji - Manila, yen 3.90; Moji-Singapore, yen 4.50; Moji-Batavia, yen 4.70. Wheat from Manchuria to Europe, which paid 65 shillings a year ago, stood at 32 shillings at the end of April. As a result of these and other slumps the Kokusai and Kawasaki lines were reported as being about to tie up 11 vessels of 94,000 deadweight tons, to which were to be added 10 vessels of 50,000 tons, ownership scattered. In liner rates the Nanyo Yusen Kaisha has cut rates from Japan to Malaysia, general cargo having dropped from yen 12 to yen 9. This company was a member of the conference, which included also the N. Y. K., O. S. K. and Java-China-Japan.

# MARINE INSURANCE

**CHARLES F. HOWELL, Eastern Contributing Editor**
**"FRANCIS ADRION," Western Contributing Editor**

## With Eastern Underwriters

### Marine Syndicates' Reports

Official summaries of the minutes of the recent annual meeting of the American Marine Insurance Syndicates indicate a condition of those important organizations quite as satisfactory as their best friends could have desired in view of the adverse circumstances under which the syndicates, in common with all marine insurance undertakings, have been obliged to operate of late. Hendon Chubb, chairman of the underwriting committee, in his report called attention to the fact that the altered conditions that arose shortly after the syndicates began accepting business have not only continued but been accentuated during the twelve months just passed. Practically all fleets have had to be renewed at a reduction of from 40 to 50 per cent in value, and although during the same period there has been a marked decrease in the cost of repairs, yet this has not been commensurate with the reduction made in the cost of insurance. In addition, a large number of vessels have been laid up out of commission, and the reduction in premium income brought about by these two causes has in turn resulted in increased competition for the remaining business.

During the past twelve months not only have there been no sales by the government on the part-payment plan contemplated by the formation of Syndicate B, but many of the vessels already sold have reverted to the government, so that the present premium income of Syndicate B is almost negligible. Mr. Chubb stated that the managers, faced by this difficult situation, have felt it necessary, so far as possible, to meet the competitive conditions, and have agreed to reductions in values and in rates when there seemed any possibility of the business resulting in profit. There have, however, been many fleets where the terms offered by competing markets have been such that it has seemed necessary to the managers to let the business go to the competing markets. The loss of the Northern Pacific was cited as an illustration of the wisdom of this course, as not a dollar of the coverage was placed in the syndicates when the rate they quoted was unsatisfactory to the owners.

"It is impossible to prophesy as to the future," observed Mr. Chubb, "but it seems as though the bottom of the market must have been reached; but it is useless to hope for any definite improvement until the lesson taught by inadequate rates has been more thoroughly absorbed by competing markets. In the meantime the syndicate must be content with a very moderate business, but keep intact the large facility they offer for those desiring to place their business in the American market."

Lawrence J. Brengle, chief underwriter of the syndicates, in his written report showed a balance on the right side of the ledger. He referred at considerable length to the discussions with the Shipping Board relative to lower rates on the latter's vessels. The syndicates have recognized the situation in which the board is working, particularly in that the latter feels that in selling its ships it cannot ask purchasers to pay a materially higher rate to the syndicates than that at which owners could obtain insurance in the competitive markets of the world. At the same time it was pointed out that the marine insurance markets of the world are largely in a demoralized condition, and that business is being done by them at rates lower than heretofore, despite that fact that the weight of evidence is that the hull business in those years was conducted at a loss. Thus while a general reduction in rates was not deemed advisable by the syndicate managers a plan was formulated for Shipping Board insurance which, briefly, is as follows:

1. When a private owner's interest is written in C, the same rate will be quoted in B for the government's interest.

2. Where a private owner's interest is placed with underwriters other than C, Syndicate B will quote for the government's interest the same rates as would have been quoted for the owner's interest if insured with Syndicate C.

All obligation to place such insurance with B is suspended and the government and owners are at liberty to place the insurance in the world's markets if it be so decided in each case by the Shipping Board. This plan is to be submitted to the subscribers for consideration in accordance with the articles of agreement, and will finally be dealt with at a subsequent meeting.

### Salvage Association Operations

Subsequent to the recent annual meeting of the United States Salvage Association a summary of the minutes was prepared for advance publication, and from this the following information has been secured. As is generally known, the Salvage Association has been the operating corporation of Syndicate A since November 1, 1921. Acting Manager Lawrence J. Brengle submitted a report of the combined operations of these two organizations. From his statements it is apparent that the work undertaken by the association has been conducted along broad and practical lines, and the operations have not been confined to local developments only, but that the aim has been to continue the establishment of agencies in the principal maritime ports of the world, to the end that its facilities may be of valuable service to the United States Shipping Board, underwriters and shipping interests in general.

Said Mr. Brengle: "We have, up to March 1, 1922, appointed agents at eighty-eight ports. South and Central America and the West Indies are practically completed, and our representatives in the United Kingdom, France, Spain, Portugal, Norway and Sweden are likewise established at practically all the important ports. Our main efforts at present are directed at finding suitable agents in Germany, the Levant, Africa, Asia and the East Indies. We have endeavored, as far as possible, to place our interests in the hands of established business houses in the shipping trade, giving preference to American firms or individuals wherever they are available. Our foreign agents to date have handled forty-two damage cases for us. The majority of these have been at Havana, Cuba, which has produced thirteen. Of these foreign cases twenty-five have been for private account, and seventeen for the United States Shipping Board."

Domestic damage survey work has been as follows: Up to February 1, 1922, there has been made a total of 3049 surveys; of which 2507 were made during 1921. Included in this total were 786 damage surveys for private account and 2263 for the United States Shipping Board. Of this total New York supplied 1194, New Orleans 441, Norfolk 321, Baltimore 217, Galveston 201, Boston 159, Savannah 152, Seattle 61 and San Francisco 47.

In his report Chief Surveyor Foley stated that repairs are now being carried on for 50 per cent less than they were a year ago. This applies especially to the New York district, where the drydock rates were reduced last June from 16 cents and 14 cents to 5 cents straight, and labor rates cut 15 per cent in August, with a further reduction of 10 per cent in February, 1922. This low cost of repairs is primarily due to the scarcity of work and keen competition. Competitive bids are reasonable. This condition is likely to continue until the volume of work in repairs increases. There are now 435 United States Shipping Board vessels in commission, and the association is making on these boats alone an average of 150 damage surveys and 100 condition surveys a month. The selling price of new cargo tonnage has dropped approximately 60 per cent in the past twelve months, and is now about $35 a deadweight ton. It is almost impossible to state the replacement value of vessels, as practically no contracts for new tonnage have been placed recently.

Condition surveys for the United States Shipping Board, from April 1, 1921, to February 1, 1922, totaled 1344; of this number 1240 were made in 1921, and 104 in January, 1922. These periodical surveys are being made on all Shipping Board owned vessels that are being operated under the managing owners' agreement or on a bareboat charter basis, and also on those vessels that have recently been sold on the deferred payment plan. These surveys are the most thorough that can be made without the "opening up" of the boat's machinery.

## Lake Underwriting Outlook

Both carriers and underwriters are anticipating a much more active season on the Lakes this year than last. The grain movement last year was heavy, but the ore shipments were light, only 23,000,000 tons being moved compared with the record year of 1918 with its 68,000,000. It is estimated that at least 40,000,000 tons will be shipped this year, in view of the activity in the copper and other mines. Grain and ore eastbound and coal and package freight westbound comprise the largest part of the cargo business on the Lakes. Short voyages and efficient cargo carrying methods have tended to make the insurance rates very low. They range from 5 cents a hundred dollars on westbound general cargo to 30 cents a hundred dollars on eastbound grain. Practically all cargo on the Lakes, including grain, is written with average irrespective of percentage, and over a period of years has proven profitable to the underwriters. Grain shipped by the all-water route from the head of the Lakes to Montreal and transshipped at Port Colborne or Kingston into barges has proved the least profitable of any branch of the Lake cargo trade because of the poor character of the barges employed in the carrying of this commodity. Good steel barges will ordinarily deliver a grain cargo without damage, but wooden barges, old and battered, never should be used for such a perishable cargo as grain.

Much of the grain on the Lakes is written under what are known as vessel agency certificates; that is, the agent who charters the freight space to the shipper agrees to do so without a commission provided the shipper will permit the vessel agent to arrange the insurance. All vessel agents have in their possession books of insurance certificates issued by various insurance companies, and the agent issues the certificates to the shipper sending carbon copies of the certificates to the insurance broker through whom the arrangement between the underwriter and the vessel agent has been consummated. The vessel agent is granted a commission for the placing of this insurance which, as indicated above, he accepts in lieu of a fee for charter hire.

For the present season the Lake hull business will be on practically the same basis as last year, namely, $75 a ton and at the annual rate of 3¾ per cent.

## Largest Ever Written Here

The largest marine insurance policy ever written on a single hull in the United States went into effect at noon of April 10. It was a builder's risk contract for $2,500,000, and was issued by the Amercan Marine Insurance Syndicates on the Leviathan, reconditioning at Newport News. The rate is 1 per cent, the valuation $4,000,000, and the term twelve months. The coverage is under the usual builder's risk form and includes strikes. The insurance was issued through Syndicate C, and is participated in by forty-five American companies and twenty-two foreign and foreign-controlled companies admitted to do business in this country. The assureds are the United States of America, and/or the United States Shipping Board, and/or the United States Shipping Board Emergency Fleet Corporation. Loss, if any, is made payable to the United States Shipping Board for the owners and the Newport News Shipbuilding & Drydock Company, as their interest may appear.

The insurance is to cover only betterments and/or improvements to the vessel, including all material, equipment, apparel, etc., finished or unfinished, together with all labor thereon, from time of delivery on wharves, platforms, docks, lighters, and/or vessels, or otherwise, alongside or in the immediate vicinity of vessel ready for use, and to continue during and after installation, and until the betterments and/or improvements are completed and/or the vessel sails from Newport News.

"The liability of these insurers," reads the policy, "is confined to loss, damage and/or expense to betterments and/or improvements (as above) and is limited to the actual value of the material, equipment, apparel, etc., and labor thereon, which is lost or damaged, plus overhead expense, but excluding profit."

## New York Official Changes

W. J. Throckmorton and Henry E. Reed have been appointed assitsant managers of the Atlantic marine department of the Fireman's Fund. The former will specialize in underwriting; the latter will have special supervision of losses.

Thomas S. Deering, of the Niagara's Pacific marine department, joins the underwriting department of Appleton & Cox.

William A. Hamilton, underwriter of transportation and jewelry with Chubb & Son, is to retire from business early in June.

The National Liberty has appointed H. M. Newhall & Company its Pacific Coast general agents.

William Ehmann, formerly with Appleton & Cox, and more recently a partner of Arnold, Ehmann & Stroter, has gone with Alberti, Baird & Carlton.

William H. McGee recently sailed for Europe. He is expected back within a few weeks.

FIREMAN'S FUND
Insures Hulls, Cargoes,
HEAD OFFICE: CALIFORNIA AND SANSOME

JOSEPH HADLEY, European Agent
3 LOTHBURY, E. C.
LONDON

E. A. VALENTINE, Resident Agent for Oregon
714-715 BOARD OF TRADE BUILDING
PORTLAND, ORE.

FRANK G. TAYLOR, MANAGER, PACIFIC NORTHWEST BRANCH

John Ferguson, the recently appointed marine manager of the American Foreign Insurance Association, will leave for an extended trip in England and Europe shortly. He will appoint numerous agencies for the association. Mr. Ferguson is highly optimistic over the outlook for a world extension of this important organization.

S. D. McComb has been appointed national councillor to represent the Association of Marine Underwriters of the United States in the Chamber of Commerce of the United States. A councillor, it will be recalled, is an important factor, occupying the position of liaison officer between the National Chamber and his own organization on important questions.

### Marine Underwriters' Annual Meeting

At the fourth annual meeting of the Association of Marine Underwriters of the United States, recently held at New York, William H. McGee was elected president, F. C. Buswell vice-president, S. D. McComb secretary and treasurer, and E. G. Driver assistant secretary.

### Flood Losses

Marine underwriters sustained considerable loss in the April floods in the South. At Waxahachie, Texas, the Trinity River flooded cotton compresses to a floor depth of two feet. One hundred bales were washed away, and eleven hundred bales were badly damaged. About four hundred bales were covered against flood risk. C. F. H.

# On the Pacific

## The Hague Rules, 1921

The need of uniformity in maritime laws has grown more apparent year by year. The liability of a carrier and the protection afforded a shipper under a bill of lading are vital in the fostering of overseas trade.

The modern bill of lading, which when accepted by the shipper firmly binds him to its conditions, has grown to be a complex and formidable document. Its very portentousness has become dangerous to the average shipper, for he has long since ceased to attempt to read the vast number of clauses embodied therein. If, therefore, the carrier shall add another clause or two, detrimental perhaps to the shipper, the latter will probably be quite unaware of this unhappy fact. His first intimation of the meaning and effect of this new clause will be broken gently to him by his lawyers when and if consulted on the point.

It must be borne in mind that the bill of lading of today is no hit-and-miss proposition. It is the result of great thought and expense and is based on years of experience. It is construed by the shipowner's lawyers, always with an eye to past decisions on the carrier's liabilities. It is only natural, therefore, that exceptions have been added, when lawful, one upon another as possible need arose. On the other hand, it is not within reason that the shipowner is unprepared to assume certain responsibilities in connection wilth the safe carriage of property. Every day claims are paid by fair-minded carriers, notwithstanding the fact that their bills of lading contain technical grounds for claiming immunity.

### The Problem

In summing up the foregoing we have on one hand the shipper who is offered an indifferent amount of protection on his venture, on the other the carrier who has entrenched himself so securely that he has, by his ever increasing exceptions, defeated to a certain extent at least his own ends—namely, the encouragement of overseas trade.

Then again there are to be considered the conflicting laws in various countries now in force. Ocean transportation is essentially international and uniform regulations appear to be eminently desirable.

It is interesting at this time to consider The Hague Rules, 1921, as applied to the above situation. The Hague Rules were drafted by the maritime law committee of the International Law Association, and shipowners, shippers, consignees, bankers and lawyers collaborated in the work throughout. Inasmuch as all sides of the question were represented, it seems extremely probable that the text of the rules as finally adopted should go far in correcting existing evils.

Various organizations throughout the United States have considered the rules and have approved them. For example, the executive committee of the National Foreign Trade Council issued a statement that reads in part as follows: "The committee is of the opinion that the principle of uniformity of commercial documents, to which the National Foreign Trade Council has frequently declared its allegiance, will be materially aided by the adoption of The Hague Rules, 1921."

It might be stated here that the scheme is to have the rules adopted without any legislative tug-of-war. As regards the United States, all that will be required is an enabling statute legalizing the use of bills of lading containing The Hague Rules, 1921. This will be necessary in that certain features of the rules conflict with the Harter Act. The American Institute of Marine Underwriters has approved the adoption of the rules and considers it desirable that steps be taken to secure uniform legislation in the various mar-

INSURANCE COMPANY
Freights and Disbursements
STREETS, SAN FRANCISCO, CALIFORNIA
W. H. WOODRUFF, Manager, Southern California Marine Branch
230 BYRNE BUILDING
LOS ANGELES
CHARLES R. PAGE, Manager
ATLANTIC MARINE DEPARTMENT
72 BEAVER STREET NEW YORK
309 COLMAN BUILDING, SEATTLE, WASHINGTON

itime countries with a view of carrying out the rules' intent.

A number of British shipowners have already adopted a bill of lading embodying the rules. The lead established in this respect by Alfred Holt & Company has now been followed by others. Lloyd's List, April 7, speaks of the rules in use by the South African lines and their contemplated use by the South American conference lines. Competition no doubt will do much to finish the above should the rules work out to advantage. The shipper, if questioned by his banker on the lack of some procurable protection, and mayhap by his underwriter, will soon see to it that his contract embraces this feature.

There is of course considerable active opposition, and here lies the most effective means of bringing about the adoption of the rules, if they prove themselves in argument.

It would seem that in some of the objections aired the objectors have not considered the rules as against present conditions. Rather they have matched them against what they conceive to be a perfect contract in respect to their particular needs.

### Objection No. 1

It is impossible under the rules to secure a clean bill of lading, as the rules exempt the carrier from issuing a bill of lading unless shipping marks remain legible until the end of the voyage, and also excuse him from issuing such a bill of lading covering goods that he has reasonable grounds to suspect are not accurately represented by the shipper.

### Answer

To begin with, a bill of lading is issued at the inception of and not at the termination of the voyage. The rules, it is true, require that to secure such a bill of lading goods shall be marked in such a manner as will remain legible until the end of the voyage. The rules are intended to improve conditions generally, and surely if they result in a more careful marking it will be well for all concerned. Being faced with this condition there is no necessity of it proving a handicap as regards the securing of a clean bill, and this document when secured will be the shipper's prima facie evidence that goods were well and sufficiently marked. In effect, the carrier by his acceptance, admits this fact and anything to the contrary will have to be proved by him, not by the shipper.

As to the second part of this objection, why should anyone be compelled to acknowledge receipt of something that he has reason to believe does not in fact exist or is misrepresented? This is also a condition fair to all concerned. When the carrier has indicated that he is satisfied that the shipment is in fact as represented and has indicated this by the issuance of a clean bill, the burden of proof falls upon him, not upon the shipper.

### Objection No. 2

The rules do not allow sufficient time in which to file claims, but still demand the manifest impossibility of filing a claim for concealed loss before removal from possession of the carrier.

### Answer

This objection plainly lacks force. Clause No. 6 of Article III reads: "Unless written notice of a claim for loss or damage and the general nature of such claim be given in writing to the carrier or his agent at the port of discharge before the removal of the goods, such removal shall be prima facie evidence of the delivery of the goods as described in the bill of lading and in any event the carrier and the ship shall be discharged from all liability in respect of loss or damage unless suit is brought within twelve months after delivery of the goods."

This clause is a decided improvement over present day conditions. It would be well at this time to compare this objection with No. 1 in connection with the issuance of the bill of lading. Assume, for the purpose of argument, that the carrier has issued a clean bill and has thus given the shipper prima facie evidence of receipt by the carrier of goods as represented. What, then, could be more equitable than the provisions of the above clause, which simply reverse the situation to embrace delivery as against receipt of goods? Naturally, if there is apparent damage, claim will be filed before removal. If there is no apparent damage, removal of the goods is prima facie evidence that goods were delivered by the carrier as described in the bill of lading. It is admitted that removal of goods shifts the burden of proof to the shipper, but that certainly does not imply that he is denied the right of filing a claim. As a matter of fact, he is given under the rules a period of twelve months to assemble the amount of evidence required to overcome the assumption of delivery in good order manifested by the removal of the goods. Compared with the usual 30, 60 or 90 days allowed, this feature of the rules is a decided improvement.

This clause would be a positive boon to underwriters and lawyers. The underwriter of today is often presented with claims for damage that are properly claimable against the carrier, long after the period allowed for the filing of claim has elapsed. With few exceptions the parties most concerned have proved to be notoriously negligent in this respect. Hence the underwriter is ofttimes faced with the alternative of paying a claim for which he is in no wise liable or losing a valued account. Lawyers have always found the commonly used time stipulations a great source of worry. Whether retained by carrier or shipper they are equally troublesome. When employed in the interest of a shipper he is often faced with the necessity of commencing suit before he has had sufficient time to secure the proper evidence, or assuming that the time allowed for filing claim has elapsed he is confronted with the uncertainty of convincing the court that the allotted time was insufficient or otherwise dispose of this stipulation. This uncertainty is to be faced, mind you, after the lawyer's case has been prepared and after his client has faced the expense of this preparation.

When employed by the carrier that person is likewise confronted with the possibility of this means of defense being adjudged adversely. He is therefore loath to base his defense on this point except when all other means have failed. What then could be more desirable to an attorney than to abolish this point, to such an extent at least as to set a period of time that might well be judged universally as being definite and fair to all concerned.

### Liability or Valuation

A great deal of discussion has arisen as to the correct construction of paragraph 4 of Article IV of the rules. The clause reads as follows: "Neither the carrier nor the ship shall be responsible in any event for loss or damage to or in connection with goods in an amount beyond £100 per package or unit, or the equivalent of that sum in other currencies unless the nature and value of such goods have been declared by the shipper before the goods are shipped and have been inserted in the bill of lading."

It is more than passing strange that this important feature of the rules permits of more than one construction. Nevertheless, well-informed men are taking decidedly opposite views as to whether or not this clause implies that a package is valued at not more than £100. If this is so, it naturally permits of a pro rata settlement based on the percentage of damage. Taken thus, if a package shipped, value undeclared and worth £1000, shall be damaged to, say, 50 per cent, claimant would be entitled only to receive in respect to this damage £50, though his loss is actually £500. If the contrary is true and this clause does not permit of average, claimant would of course be entitled to receive £100.

In support of the valuation theory it is argued that it would be unfair to the carrier to subject him to the risk of carrying a package valued greatly in excess of £100, while he, not knowing the actual value, would be liable to the extent of £100 for a comparatively small amount of damage to the package. For the reason that he is unaware of this high value he is in no position to take extra precautions for its safety. It is argued further that a limitation of liability would conflict with nearly all carriage of goods acts, which prohibit such limitation of liability, while they in most cases do not prohibit clauses recording a mutual agreement as to value per package.

Contrary to the above, it is argued that this clause permits of no such construction. The fact that the clause apparently works a hardship on the carrier in some instances does not in any way indicate that he shall not be liable up to £100 for a partial loss on a package of greater value. In fact, it is considered by some to be one of the concessions granted by the carrier, for which he is partly repaid by the simplicity afforded in the way of settling claims.

It is further argued that the fact that this clause conflicts with certain provisions in various carriage of goods acts in no wise indicates that a different meaning should be derived from this clause. In this connection it is argued that the framers of the rules were thoroughly cognizant of the fact that this matter of responsibility would require some enabling legislation. Further, it is asked, referring to the Harter Act, for example (wherein no clause is found prohibiting a mutual agreement as to value per package), whether this was not merely a handy loophole utilized to evade the actual intent of the act.

### Rules Discussed

On April 20, the Association of Marine Underwriters of San Francisco was addressed on the subject of the rules by Farnum Griffiths of the San Francisco law firm of McCutcheon, Olney, Willard, Mannon & Greene. Without advocating or opposing their adoption the speaker explained the rules article by article in an exceedingly forceful manner. A better understanding of the rules naturally follows such a gathering and organizations representing interested parties would do well to follow suit.

It is clearly the duty of all concerned to familiarize themselves with the rules. Then it is equally important to work for or against their adoption according to conviction. For this is a matter of vital importance and should be supported strictly upon its merits. To secure its general adoption requires the stamp of approval of a large majority.

One of the great arguments in favor of the rules is the wide publicity urged by its supporters. This, then, is no matter of selfish interest, but of calm, dignified, international agreement. No matter of diversified interests being battled into law, misshapen by lobbyists' provisos, but a clear, straightforward assumption of proper responsibility.

Or it is not. You and each of you should decide and at once.

## Canal Toll System on Repairs

The steamship Arizonan of the American - Hawaiian Line passed through the canal March 14, eastbound, carrying 12,000 tons of general cargo. Vessel put back from Caribbean after losing one propeller blade and cracking another. She was repaired at Balboa. In addition to renewing the blades of the propeller, the forces of the mechanical division raised the rudder and rewooded the stern tube bearings. The job is principally of interest on account of its affording a striking application of the rule established under the executive order of November 17, 1921, that vessels transiting the canal for the sole purpose of receiving repairs at Balboa are exempted from the payment of tolls. Tolls on the Arizonan, a vessel of 6970 net tons, Panama Canal measurement, and 6514 net tons, United States measurement, amount to $8,142.50 when she is laden. For transiting for the sake of repairs, however, the charges for transit were at the rate of $5 a foot of draft, amounting to $155 for 31 feet. There were additional charges for towage, made necessary by the ship's condition.

After returning through the canal the Arizonan discharged about 7000 tons of her cargo at Pier 18, Balboa, and went into drydock with the rest. She entered the drydock in the afternoon of March 26, and left it in the morning of March 28.

## Insurance Brevities

In a decision filed recently, Judge Jeremiah Neterer in Hjalmar Tellefsan vs. The Schooner Horace X. Baxter denied the libelant's claim to recover from the vessel. The libelant claimed that he was engaged to assist the vessel's regular crew in loading lumber and was injured while so engaged. His claim for damages was based upon the insufficiency of loading apparatus and darkness of the vessel's hold. As a separate cause of action he claimed that while moving a heavy timber he fell in the vessel's hold, sustaining serious injury. The libelant failed to prove any negligence upon the part of the vessel and the working conditions referred to in the libel being known and assumed likewise offered no grounds for relief.

Rollins, Burdick, Hunter Company have announced the removal of their office to 369 Pine street, San Francisco. It is really refreshing in these times to receive a well-engraved card announcing the removal of an office to larger and more commodious quarters.

* * *

I read with interest various reports dealing with floating mines sighted. One drifter was reported in the path of the liners between Boston and Europe recently. These mines are credited in all cases with being innocuous. Nevertheless, I warrant you no skipper is minded to put one to the test.

* * *

The Insurance Office of Australia has been absorbed by the North British & Mercantile Insurance Company. Reports from Sydney signify that heavy marine losses incurred by the I. O. A. during 1921 left this company in need of more capital. This position was augmented by the amount of cash deposits required in various countries. Recent legislation in New Zealand alone called for an additional deposit of £35,000. The North British made a tentative offer for the stock, purchase hinging on the transferring of at least 85 per cent of the shares issued to them at the price of 9s each net. The directors of the I. O. A. issue a circular recommending the acceptance of the terms offered by the North British & Mercantile Insurance Company.

* * *

Return premiums are at the present moment adding to last year's troubles for local underwriters. Vessels in large numbers that during 1920 were busily engaged all year were laid up for the greater portion of 1921 and it is not at all uncommon to see harbor risk returns representing 60 to 70 per cent of the premiums charged. These returns must now be met and represent a serious drain when applied to the present depleted income.

Were this condition to long continue it certainly would cause a revision of rate. For it is useless to argue that the underwriter has secured the full premium for the risk involved. Though this is actually so, the original annual rate was based on sea risk insurance for full term and a spread of business at this rate constituted the anticipated income to be derived. As it actually happened, however, these vessels were at sea, we might say, just long enough to enable a goodly number of them to get into trouble. It can be readily seen that a very minor claim would more than offset the amount of premium received for a vessel on sea risk for, say, two months and laid up for the remainder of the policy term. For example, a vessel rated at 7 per cent and paying 2 per cent for harbor risk would actually pay under these conditions only 2.833 per cent for the entire term. This figure is gross and would, of course, be reduced by any brokerages involved.

In other words, had the underwriter insured this vessel for a sixty-day period while at sea, the premium charged would have been considerably more than 1.166 per cent, this being the amount actually received.

"FRANCIS ADRION."

# FOUR UNUSUAL COMBINATION FREIGHTERS

## Vessels Under Construction at the Yard of Fraser, Brace, Ltd., for Lake, River, Canal or Ocean Service

FOUR steel single-screw freighters of rather unusual characteristics are building at the yard of Fraser, Brace, Ltd., at Three Rivers, Quebec, for the George Hall Coal Company. These vessels are interesting principally on account of the fact that their hulls and machinery were designed to get the greatest possible combination efficiency for Lake, canal, river and sea service.

The overall dimensions are: length, 258 feet; beam, 43 feet; and molded depth, 20 feet 6 inches. They are built on the Isherwood longitudinal framing system, with cellular double bottoms divided longitudinally for about two-thirds the vessel's length in such a way that water ballast can be shifted for trimming purposes in working cargo. Arrangements for water ballast are provided also in fore and aft peak tanks.

Each hull has two cargo holds with six large hatches, two hatches being especially large so as to accommodate beams and billets 60 feet in length. The hulls are built with full topgallant forecastle and long raised quarter-deck aft, so that they are comparatively dry, seaworthy steamers. The hull is designed to carry 2500 tons deadweight on a canal draft of 14 feet, the grain capacity at that draft being about 120,000 bushels. The scantlings, however, are designed so that these hulls at sea may be safely loaded to a draft of 16 feet 6 inches, at a corresponding capacity in deadweight tonnage.

There are two Scotch marine boilers 14 feet 7 inches diameter by 10 feet 8 inches long, built for a working pressure of 180 pounds, and arranged for coal burning. These boilers supply steam to a triple-expansion engine of 19 by 32 by 56-inch cylinders and 36-inch stroke, and to the electric lighting plant and engine room and deck auxiliary machinery. Bunker accommodations are provided for 150 tons of coal. These engines are designed to drive the hull at a sea speed of 12 knots, fully loaded.

The powerful steam steering engine located over the after peak and controlled either from the wheelhouse forward or the top of the deckhouse aft is supplemented also by powerful hand-steering gear. Three steam winches for handling cargo and two especially designed winches for warping purposes, together with a combined steam and hand windlass, insure the rapid handling of cargo and the easy working of the ship. Hall's patent fair leads, bollards and snubbing wire compressor combine for quick and efficient working of the vessels in and out of docks and canals. The plans call for a complete system of electric lighting with direct connected steam engine generator, switchboards and pilothouse control of signal lamps and cargo-working lamps.

The officers' quarters and accommodations for a few passengers are located in the forecastle, the navigating bridge being well forward, just at the after end of the forecastle deck. The captain's quarters are directly under it and consist of a sleeping-room, office and bath. The dining saloon, engineers' quarters, stewards' rooms, pantry, refrigerator room, galley, engine room staff and deck hands are all accommodated under the raised quarterdeck aft.

# AMERICAN SHIPBUILDING

## Recent Contracts

**Los Angeles Shipbuilding & Drydock Corporation,** San Pedro, California, two double-ended steel ferryboats for San Francisco-Oakland Terminal Railways (Key Route), 225 by 42 by 11-6 loaded draft, turbo-electric engines, 1350 I. H. P. Deliveries estimated for October and November.

**American Bridge Company,** Pittsburgh, two carfloats for Long Island Railroad Company, 292 by 42 by 11-6. Launching estimated for September.

**DeFoe Boat & Motor Works,** Bay City, Michigan, steel derrick lighter for Gillespie Contracting Company of New York, 82 by 32 by 8.

**Osaka Iron Works,** Osaka, Japan, cable ship for Japanese government, 3200 gross tons, 340 by 44 by 30. Delivery estimated for late 1922.

**Federal Shipbuilding Company,** Kearny, New Jersey, two coastwise combination vessels, 350 by 52 by 19 loaded draft, triple-expansion engines, 2700 I. H. P., for Merchants & Miners Transportation Company. Deliveries estimated for January and February, 1923.

**Great Lakes Engineering Works,** River Rouge, Michigan, bulk freight vessel for Wilson Transit Company, previously reported, will be 580 by 60 by 20 loaded draft, 11,800 gross tons, triple-expansion engines, 1880 I. H. P. Delivery estimated for September.

**Staten Island Shipbuilding Company,** Staten Island, New York, ferryboat for Erie Railroad, 206 by 44-1 by 17-4 loaded draft, 1538 gross tons, reciprocating engines, 1200 I. H. P.; also three sister ferryboats for City of New York, 215 by 45 by 18 loaded draft, electric drive, 1900 I. H. P.

**Kyle & Purdy, Inc.,** City Island, New York, steel motor houseboat, Mirimar, 121 by 21 by 4 draft, two four-cylinder 120-horsepower Nelseco diesels, designer, Henry J. Gielow, Inc., 12 miles loaded speed.

**Gilpin Construction Company,** Portland, Oregon, two sheds for municipal pier No. 1, 500 by 187 feet.

**Colby Steel & Engineering Company,** Seattle, Washington, hammer-headed crane, boom 95 feet, capacity 5 tons 100 feet a minute, for port of Grays Harbor. Two similar cranes have been installed at Tacoma and one at Willapa harbor.

**Marine Construction Company,** Seattle, scow for Morrison Mill Company, Blaine, Washington, 300 tons, 110 by 36 by 8-6.

## Western Keel-layings

Chilore, combination ore and coal carrier Ore Steamship Company, Bethlehem Shipbuilding Corporation, Union Plant, Alameda Works, April 17.

## Western Launchings

San Mateo, ferryboat Jas. Rolph & Company, Bethlehem Shipbuilding Corporation, Union Plant, Alameda Works, May 9.

Rascal, sloop builders' account, W. F. Stone & Son, Oakland, California, May 16.

## Western Deliveries

Perry, destroyer U. S. N., Mare Island Navy Yard, completed and ready for commissioning since May 20, but not yet commissioned.

## Eastern Keel-layings

Two carfloats, Lehigh Valley Railroad, Bethlehem Shipbuilding Corporation, Baltimore Drydock Plant, Baltimore, April 26.

Carfloat, Brooklyn Eastern District Terminal, New York Shipbuilding Corporation, Camden, New Jersey, May 4.

Freighter, Mathews Steamship Company, Port Arthur Shipbuilding Company, Port Arthur, Ontario, May 10.

## Eastern Launchings

Mirimar, steel houseboat Mr. Eisenlohr, Kyle & Purdy, Inc., City Island, New York City, May 1.

Dolphin, diesel yacht Cox & Stevens, Newport News Shipbuilding & Drydock Company, Newport News, April 8.

Gen'l John McE. Hyde, river steamer War Department, Charles Ward Engineering Works, Charleston, West Virginia, March 11.

Caisson "A" for pier, Delaware river bridge, Philadelphia side, New York Shipbuilding Corporation, Camden, New Jersey, April 24.

## Eastern Deliveries

Californian, motorship American-Hawaiian Steamship Company, built by Merchant Shipbuilding Corporation, Chester, Pennsylvania, and engined by William Cramp & Sons Ship & Engine Building Company, Philadelphia, May 6.

S-22, submarine U. S. N., Bethlehem Shipbuilding Corporation, Fore River Plant, Quincy, Massachusetts, April 4.

## Important Repair Awards

**Moore Shipbuilding Company,** Oakland, California, reconditioning the Pacific Mail liner Wolverine State, installation of steerage accommodations and officers' quarters, $44,900.

**The Todd Shipyards Corporation,** Brooklyn, conversion of the Southern Pacific Company's liner Creole to an oil burner, enlargement of passenger quarters and general overhaul, $200,000.

# Progress of Work

## Pacific Coast

### BETHLEHEM SHIPBUILDING CORPORATION, LTD. UNION PLANT

### Potrero Works

Purchasing Agent: O. W. Streett.

Submarines USN: S-31, hull 136; S-32, hull 137; S-33, hull 138; S-34, hull 139; S-35, hull 140; S-36, hull 141; S-37, hull 142; S-38, hull 143; S-39, hull 144; S-40, hull 145; S-41, hull 146; all launched; outfitting proceeding slowly.

### Alameda Works

Chilore, hull 5309, combination ore and coal carrier Ore Steamship Co; 571-6 LOA; 550-1 LBP; 72 molded beam; 44 molded depth; 32-4 loaded draft; 11½ loaded speed; 20,000 D WT; Curtis turbines with Falk reduction gears, 5000 SHP; 3 Scotch SE boilers, 17-6x12, each 4287 sq ft; oil burners; **keel Apr17/22.**

Lebore, hull 5310, combination ore and coal carrier Ore Steamship Co; sister to above.

San Mateo, hull 5314, ferryboat Jas Rolph & Co; 230 LOA; 63-6 beam over guards, 42 molded; 19-6 molded depth; TE eng, 1400 IHP; propeller drive; 3 WT boilers; keel Aug27/21; **launch May9/22.**

No name, hull 5315, ferryboat Jas Rolph & Co; sister to above; keel Feb20/22.

No name, hull 5316, ferryboat Jas Rolph & Co; sister to above.

### CHOLBERG SHIPYARD, VANCOUVER, B. C.

Purchasing Agent: W. Meed.

(These vessels to be completed by Dominion government.)

Sir Henry Drayton, hull 5, 4-masted barkentine Victoria Shipowners, Ltd; 250 LOA; 45-6 beam; 21-10 loaded draft; 2400 DWT; sailing vessel; shaft logs fitted for auxiliary but no machinery installed; keel May 15/20.

No name, hull 6, 4-masted barkentine Victoria Shipowners, Ltd; sister to above; keel June4/20.

No name, hull 7, 4-masted barkentine Victoria Shipowners, Ltd; sister to above.

The American-Hawaiian motorship Californian, built by the Merchant Shipbuilding Corporation and engined by the William Cramp & Sons Ship & Engine Building Company, underwent her trials off the Delaware Capes May 1 and 2. There was no interruption of any kind during the trials, the machinery not being stopped or slowed down at any time. On the six-hour fuel consumption run the engines developed 4500 I. H. P. on an average oil consumption for all purposes of 3/10 of a pound an I. H. P. hour, the average speed being 13 knots. The vessel was only partly loaded. She was delivered May 6. Her first voyage will be in the United States intercoastal trade.

### HANLON DRYDOCK & SHIPBUILDING CO., OAKLAND

Purchasing Agent: R. Barker.

Dan F. Hanlon, hull 89, steam schr. D. J. Hanlon; 2500 DWT; 1400 IHP engines; 2 B&W boilers; work suspended.

### LOS ANGELES SHIPBUILDING & DRYDOCK CORPORATION, SAN PEDRO, CALIF.

Purchasing Agent: L. R. McFie.

No name, hull 37, double-ended steel ferryboat San Francisco-Oakland Terminal Railways; 225 LBP; 42 molded beam, 62-7 over guards; 11-6 loaded draft; 13 loaded speed; turbo-electric eng, 1350 IHP; 2 B& W WT boilers, 5000 sq ft total HS, 225 WP, 65 superheat, natural draft, oil-burning; keel May/22, est; launch Aug/22, est; deliver Oct/22, est.

No name, hull 38, double-ended steel ferryboat San Francisco-Oakland Terminal Railways, sister to above; keel May/22, est; launch Sept/22, est; deliver Nov/22, est.

### NAVY YARD, PUGET SOUND

Medusa, repair ship for government; 460 LBP; 70 beam; about 19 loaded draft; 17-5 loaded speed; turbine eng, 7000 IHP; 2 WT express type boilers; 10,000 tons disp; keel Jan2/20; launch and deliver dates not set.

Holland, submarine tender for government; 460 LBP; 61 beam; about 20 loaded draft; 16 K loaded speed; turbine eng, 7000 IHP; two WT express type boilers; 10,000 tons disp; keel Apr11/21.

### NAVY YARD, MARE ISLAND

Montana, battleship USN; 660 LBP; 105 beam; 33 loaded draft; 23 loaded speed; 42,200 disp; turbo-electric engs, 60,000 SHP; 12 Bu's express boilers, 74,040 sq ft; keel Sept 1/20.

Trever, destroyer USN; 310 LBP; 30-11½ beam; 9-4 loaded draft; 35 loaded speed; 1215 disp; geared turbine eng, 26,000 SHP; 4 Normand boilers, 27,000 sq ft; keel Aug12/19; launch Sept15/20; ready for commissioning since Feb15/22.

Perry, destroyer U S N; sister to above; keel Sept15/20; launch Oct 29/21; ready for commissioning since May 20/22.

Decatur, destroyer USN; sister to above; keel Sept15/20; launch Oct 29/21.

### W. F. STONE & SON, OAKLAND, CAL.

Rascal, sloop builder's account; 41 LBP; 8-6 beam; 6 deep; **launch May16/22.**

Corinthian II, sloop Corinthian Yacht Club; 35 LBP; 8-8 beam; 6 deep.

No name, aux sloop builder's account; 49 LBP; 14 beam; 5-6 deep; gas eng, 15 IHP.

Sparrow, tug Alaska Packers' Association; 65 LBP; 16 beam; 5-6 deep; gas eng, 80 IHP.

No name, trawler Western Fish Company; 65 LBP; 16 deep, 7 loaded draft; Diesel eng, 120 IHP.

No name, trawler Western Fish Company; sister to above.

Pile-driver Naknek Packing Company; 40 LBP; 20 beam; 3 loaded draft.

### TODD DRYDOCK & CONSTRUCTION CORP., TACOMA

Purchasing Agent: C. L. Bankson.

Omaha, hull 100, scout cruiser US N; 555-6 LOA; 550 LBP; extreme beam 55-4; molded beam 54-9; depth molded 26; mean loaded draft 13-6; disp 7100 tons; Westinghouse Parsons turbines and reduction gear, 105,000 IHP; designated speed 34; 12 Yarrows WT boilers; keel Dec6/18; launch Dec14/20.

Milwaukee, hull 106, scout cruiser USN; sister to above; keel Dec13/18; launch Mar24/21.

Cincinnati, hull 107, scout cruiser USN; sister to above; keel May15/20; launch May23/21.

## Atlantic, Lakes, Rivers

### AMERICAN BRIDGE COMPANY, PITTSBURGH, PENN.

Purchasing Agent: W. G. A. Millar.

Fifteen decked barges, 120 LBP; 30 beam; 7 deep; US Engineers, Memphis, Tenn.; 7 launched, 6 delivered.

Twelve sand barges, J. K. Davison & Bro., Pittsburgh, 135 x 26 x 10; 5 launched; 4 delivered.

Two sand barges, H. H. Halliday Sand Co., Cairo, Ill.; 130x30x7-6; launch May/22.

One dredge hull, H. H. Halliday Sand Co, Cairo, Ill; 110 x 30 x 5-6; launch June/22, est.

Two oil barges, Gulf Refining Co; 158x36x11; one launched.

Four decked barges, undisclosed interests, 180x36x8; launch July/22, est.

One wharfboat, undisclosed interests, 160x26x5; launch July/22, est.

Two carfloats, Long Island R R Co, 292x42x11-6; launch Sept/22, est.

### BATH IRON WORKS, LTD., BATH, MAINE

Purchasing Agent: John L. P. Burke.

Light vessel 106, hull 87, second-class light vessel US Dept of Commerce, 109-6 LBP, 30 beam, 14-4 loaded draft, 9½ speed; comp eng, 400 IHP; 2 Scotch boilers, 10-6 x 11-4; keel Apr/22, est; launch Oct/22, est; deliver Dec/22, est.

Light vessel 107, hull 88, sister to above; keel May1/22, est; launch Nov/22, est; deliver Jan/23, est.

Light vessel 108, hull 89, sister to above; keel June1/22, est; launch Jan/23, est; deliver Mar/23, est.

Light vessel 109, hull 90; sister to above; keel July1/22, est; launch Mar/23, est; deliver Apr/23, est.

Light vessel 110, hull 91, sister to above; keel Aug1/22, est; launch May/23, est; deliver June/23, est.

### BETHLEHEM SHIPBUILD'G CORPORATION, BALTIMORE DRYDOCK PLANT, BALTIMORE

Fort McHenry, hull 125, tanker builder's account; 340 LBP; 49 beam; 23-6 loaded draft; 10 loaded speed; 6000 DWT; rec eng, 2000 I HP; 2 Scotch boilers, 15-3; keel Nov24/20; launch Feb1/22.

Hull 129, carfloat Lehigh Valley R. R.; 270 LBP; 38 beam; 10-6 loaded draft; **keel Apr26/22.**

Hull 130, carfloat Lehigh Valley R. R.; 325 LBP; 38 beam; 10-6 loaded draft; **keel Apr26/22.**

Hull 131, carfloat Lehigh Valley R. R.; 180 LBP; 36 beam; 9 loaded draft.

### BETHLEHEM SHIPBUILDING CORP., FORE RIVER PLANT, QUINCY, MASS.

Lexington, hull 1300, battle-cruiser U S N.

Raleigh, hull 1382, scout cruiser U S N.

Detroit, hull 1383, scout cruiser U S N.

Massachusetts, hull 1400, battleship USN.

And the following nineteen submarines USN: hulls 1309 to 1320 inc, submarines S-18 to S-29 inc; hulls 1389 to 1394 inc; submarines S-42 to S-47 inc; **S-22 delivered Apr4/22.**

### BETHLEHEM SHIPBUILDING CORP., HARLAN PLANT, WILMINGTON, DEL.

Hull 3478, yacht Keith Spalding; 160 LBP; 30 beam; 15-3 deep; 360 DWT; two 6-cyl 180 HP Nelseco diesel engs.

### BETHLEHEM SHIPBLDG. CORP., SPARROWS POINT PLANT, SPARROWS POINT, MD.

Western World, hull 4197, combination USSB; 518 LBP; 72 beam; 30-7 loaded draft; 16 loaded speed; turb eng, 10,000 IHP; 8 Yarrows boilers; keel July29/20; launch Sept 17/21.

Marore, hull 4212, ore and oil Ore SS Co; 550 LBP; 72 beam; 32-4 loaded draft; 11½ loaded speed; 20,000 DWT; turb eng, 4600 IHP; 3 Scotch boilers, 17-6x12; keel May 2/21; launch Apr1/22.

Steelore, hull 4213, ore and oil Ore SS Co; sister to above; keel July 20/21.

### CONSOLIDATED SHIPBUILDING CORPORATION, MORRIS HEIGHTS, N. Y.

Purchasing Agent: Bruce Scrimgeour.

Steel motor houseboat for John Ringling; 125 LOA; 21 beam; 4 draft; 12 speed; two 6-cyl 180 HP Nelseco diesel engs; deliver July 5/22, est.

### WILLIAM CRAMP & SONS SHIP & ENGINE BUILDING CO., PHILADELPHIA

Purchasing Agent: Ed. C. Geehr.

Richmond, hull 448, scout cruiser U. S. N.; keel Feb16/20; launch Sept 29/21; 88.5 per cent comp May 1/22.

Concord, hull 449, scout cruiser USN; keel Mar29/20; launch Dec 15/21; 84.5 per cent comp May 1/22.

Trenton, hull 501, scout cruiser USN; keel Aug18/20; 58 per cent comp May 1/22.

Marblehead, hull 502, scout cruiser USN; keel Aug4/20; 47 per cent comp May1/22.

Memphis, hull 503, scout cruiser USN; keel Oct14/20; 42.6 per cent comp May 1/22.

Installing Diesel engines in M.S. Californian and Missourian; **Californian delivered May6/22.**

### DEFOE BOAT & MOTOR WORKS, BAY CITY, MICH.

No name, hull 59, ferry Captain J. C. Dahmer; 65 LBP; 20 beam; 5 draft; 11 loaded speed; Fairbanks-Morse heavy-oil eng; keel Mar15/22; launch May15/22, est; deliver May 25/22, est.

No name, hull 60, yacht Thos. H. Gill; 98 LBP; 15 beam, 6 draft; 14 speed; Standard Gas eng; keel June 1/22, est.

No name, hull 61, yacht builder's account; sister to above; keel June 1/22, est.

American Girl, hull 62, frt vessel H. E. Searfoss; 65 LBP; 14 beam; 6 draft; 10 speed; Kahlenberg heavy oil eng; keel Mar20/22; launch May 15/22, est; deliver June1/22, est.

No name, hull 63, wood yacht K. M. Devos; 65 LBP; 12½ beam; 4 draft; 22 speed; gas eng; keel Mar 10/22; launch June10/22, est; deliver July1/22, est.

No name, hull 64, wood yacht J. H. Reid; 42 LBP; 11 beam, 3½ draft; 11 speed; gas eng; keel Mar 30/22; launch June15/22, est; deliver June25/22 est.

No name, hull 65, steel derrick lighter, Gillespie Contracting Co of N Y; 82 long; 32 beam; 8 deep.

### FEDERAL SHIPBUILDING CO., KEARNY, N. J.

Purchasing Agent: J. L. Hastings.

Hull 68, freighter undisclosed interests; 425 LBP; 56 beam; 27 loaded draft; 11½ loaded speed; 10,025 DWT; Parsons turbines, 3100 SHP; 3 Scotch boilers, 15-3x11-3¾; keel Mar16/22; launch Aug1/22, est; deliver Sept1/22, est.

No name, hull 72, coastwise passgr and frt Merchants & Miners Transportation Co; 350 LBP; 52 beam; 19 loaded draft; 12 loaded speed; TE engs, 2700 IHP; 4 SE Scotch boilers, 14-3x11; keel July15/22, est; launch Nov15/22, est; deliver Jan15/23, est.

No name, hull 73, coastwise passgr and frt Merchants & Miners Transportation Co; sister to above; keel Aug15/22, est; launch Dec15/22, est; deliver Feb15/23, est.

### FRASER, BRACE, LIMITED, THREE RIVERS, QUEBEC

Lake freighter George Hall Coal Company of Canada; 250 LBP; 43 beam; 20-6 deep; 12 loaded speed; TE eng, 19x32x56-36 stroke; 2 Scotch marine boilers, 14-7x10-8, coal burning.

Sister to above.

Sister to above.

Sister to above.

### GREAT LAKES ENGINEERING WORKS, RIVER ROUGE, MICHIGAN

Purchasing Agent: H. O. Kretlow.

No name, hull 242, bulk freight Wilson Transit Co, Cleveland; 580 LBP; 60 beam; 20 loaded draft; 11½ miles loaded speed; 11,800 gross, TE engs, 1880 IHP; 3 Scotch boilers, 13-6; keel May10/22, est; launch Aug1/22, est; deliver Sept1/22, est.

### KYLE & PURDY, INC., CITY ISLAND, NEW YORK CITY

Purchasing Agent: T. A. Kyle.

No name, hull 154, steel ferryboat department of plants and structures, City of New York; 90 LBP; 30 beam; 6-8 loaded draft; 10 miles loaded speed; 100 DWT; comb eng, 200 I HP; Roberts tube boilers; keel June 1/22, est.

Mirimar, hull 155, steel houseboat Mr. Eisenlohr; 101 LBP; 21 beam; 4-6 loaded draft; 12 miles loaded speed; 105 DWT; two 4-cyl 120 HP Nelseco diesel engs; keel Sept/21; **launch May1/22.**

### LAKE TORPEDO BOAT CO., BRIDGEPORT, CONN.

Purchasing Agent: C. D. Maxfield.

S-48, hull 48, submarine U S N; launch Feb26/21.

S-49, hull 49, submarine U S N; launch Apr23/21.

S-50, hull 50, submarine U S N; launch June18/21.

S-51, hull 51, submarine U S N; launch Aug20/21.

### MERCHANT SHIPBUILDING CORPORATION, CHESTER, PENN.

Vice-President: J. L. Ackerson.

Californian, hull 385, freighter American-Hawaiian SS Co; 445 LBP; 59-8 beam; 28-6 loaded draft; 11½ speed; 11,000 DWT; 2 6cyl, 4-cycle Diesel engs, 4500 metric; 1 vertical

The Matson steamship Lurline, as she appears since being remodeled by the United Engineering Works, San Francisco. The photograph shows the new promenade deck and rebuilt passenger accommodations. The total cost of the work was about $250,000.

The steamship Chiapas, Mexican States Steamship Line, at a San Francisco wharf. Williams, Dimond & Company recently took over the agency of this line.

donkey, 400 sq ft HS; keel Feb5/21; launch Nov14/21; at Cramp yard for installation of diesel engines; **deliver May6/22.**

Missourian, hull 386, freighter American-Hawaiian SS Co; sister to above; keel Feb10/21; launch Dec 14/21; at Cramp yard for installation of Diesel engines.

### NAVY YARD, BOSTON

Whitney, destroyer tender No. 4 USN; 460 LBP; 60 - 10⅛ molded beam; 21 - 0½ normal draft; 16 loaded speed; 10,600 normal disp; geared Parsons turbs, 7000 SHP; 2 WT exp boilers; keel Apr 23 / 21; launching indefinite.

### NAVY YARD, PHILADELPHIA

Dobbin, hull 7, destroyer tender USN; 460 LBP; 60-10 beam; 21 loaded draft; 16 loaded speed; 10,600 tons disp; Parsons geared turb single screw engs, 7000 SHP; 2 WT boilers; keel Dec23/19; launch May 5/21; deliver date not determined.

Constitution, hull 8, battle cruiser USN; 850 LBP; 105-4 beam; 30-11½ loaded draft; 33½ loaded speed; 43,500 disp; electric drive, 180,000SHP; 16 WT boilers; keel Sept25/20.

United States, hull 9, battle cruiser USN; 850 LBP; 105-4 beam; 30-11½ loaded draft; 33½ loaded speed; 43,500 disp; electric drive, 180,000 SHP; 16 WT boilers; keel Sept25/20.

### NEWPORT NEWS SHIPBUILDING & DRYDOCK COMPANY, NEWPORT NEWS

Purchasing Agent: James Plummer, 233 Broadway, New York City.

West Virginia, hull 211, battleship USN; 600 LBP; 97-3½ beam; 30-6 mean draft; 32,600 normal disp; 21 speed; GE turbo-elec drive, 28,900 SHP; 8 B&W WT boilers, oil, 41,768 sq ft plus 4168 superheat; keel Apr 12/20; launch Nov19/21.

Constellation, hull 215, battle-cruiser USN; 850 LBP; 101-8¼ beam; 31 mean draft; 43,500 normal disp; 33¼ speed, est; Westinghouse turbo-elec drive, 180,000 SHP; 16 WT boilers, oil, 198,000 sq ft plus 18,000 superheat; keel Aug18/20.

Ranger, hull 215, battle-cruiser USN; sister to above; keel June23/21.

Iowa, hull 258, battleship USN; 660 LBP; 105 beam; 33 mean draft; 43,200 normal disp; 23 speed; GE turbo-elec drive, 60,000 SHP; 12 White-Forster WT boilers, oil, 82,800 sq ft plus 8940 superheat; keel May17/20.

Dolphin, hull 263, Diesel yacht Cox & Stevens; 180-6 LOA; 24 beam; 14 deep; keel Feb27/22; **launch Apr 8/22.**

### NEW YORK SHIPBUILDING CORPORATION, CAMDEN, N. J.

Purchasing Agent: L. G. Buckwalter.

Eurana, hull 264, bulk oil stock; 419-3 LBP; 56-3 beam; 25-9¼ loaded draft; 10¾ loaded speed; 9870 DWT; 3 cyl TE engs, 3000 SHP; 3 SE Scotch boilers, 15-10x11-4; keel Jan17/21; launch July16/21.

No name, hull 265, bulk oil stock; sister to above.

Saratoga, hull 199, battle cruiser USN; 874 LOA; 850 LBP; 105-5¼ extreme beam; 31 mean draft; 43,500 normal disp; 33¼ loaded speed; GE turbo-electric drive; 180,000 SHP; 16 WT boilers, 198,000 sq ft plus 18,000 superheat; keel Sept25/20.

Colorado, hull 200, battleship USN; 624 LOA; 600 LBP; 97-3½ beam waterline; 30-6 mean draft; 32,600 normal disp; 21 loaded speed; Westinghouse turbo-electric drive, 28,900 SHP; 8 B&W WT boilers, 41,678 sq ft plus 4169 superheat; keel Mar29/19; launch Mar22/21.

Washington, hull 201, battleship USN, sister to above; keel June30/19; launch Sept1/21.

Kamoi, hull 267, fuel ship Japanese Navy; 497-8 LOA; 67 beam; 28 designed draft; 15 loaded speed; 13,000 DWT; elec drive, 8000 SHP; 4 B&W boilers; keel Sept14/21.

Hull 268, carfloat Brooklyn Eastern District Terminal; 340 long; keel Apr10/22.

Hull 269, carfloat Brooklyn Eastern District Terminal; 340 feet long; **keel May4/22.**

### PORT ARTHUR SHIPBUILDING CO., PORT ARTHUR, ONT.

Purchasing Agent: W. E. Decker.

Hull 47, single-deck bulk freighter Mathews Steamship Co; 530 LBP; 58 beam; 12 loaded speed; 10,000 DWT; 3-cyl TE engs, 25½-41-67x42, 2100 IHP; 3 Scotch boilers, 13-6; **keel May10/22.**

### THE PUSEY & JONES COMPANY, WILMINGTON, DELAWARE

Purchasing Agent: Jas. Bradford.

No name, hull 1020, combination steamer, sound type, Seaboard Bay Line; 320 LBP; 44 beam at waterline; 14-6 loaded draft; 18 loaded speed; 800 DWT; 4-cyl TE engs, 3000 IHP; 4 Scotch boilers, 13-3x 11-6; keel Feb23/22; launch July 7/22, est; deliver Oct/22, est.

No name, hull 1021, combination steamer, sound type, Seaboard Bay Line; sister to above; keel Feb23/22; launch Aug7/22, est; deliver Nov/22,est.

### STATEN ISLAND SHIPBUILDING COMPANY, STATEN ISLAND, NEW YORK

Purchasing Agent: R. C. Miller.

Delivery No. 6, hull 739, motor barge Standard Oil Co, N Y; 120 LBP; 25 beam; 11-9 loaded draft; 8 loaded speed; 200 gross tons; Bolinder eng, 300 IHP; keel Feb20/22; launch May25/22, est; deliver May 29/22, est.

No name, hull 740, ferryboat Erie R R Co; 206 LBP; 44-1 beam; 17-4 loaded draft; 1538 gross; rec engs, 1200 IHP; 2 Scotch boilers, 12-9x12-9.

No name, hull 741, ferryboat City of New York; 215 LBP; 45 beam; 18 loaded draft; elec drive, 1900 IHP; 4 B&W WT boilers, 8000 sq ft HS.

No name, hull 742, ferryboat City of New York; sister to above.

No name, hull 743, ferryboat City of New York; sister to above.

### SUN SHIPBUILDING COMPANY, CHESTER, PENN.

Purchasing Agent: H. W. Scott.

Agwiscot, hull 42, tanker A. G. W. I. S. Co; 480 LBP; 65-9 beam; 26-7 loaded draft; 12 loaded speed; 12,500 DWT; single screw QE engs, 4300 IHP; 4 SE Scotch boilers, 15-10 x11-11¼; keel Dec23/20.

Ferryboat Pennsylvania Railroad; 167 long; 55 beam; 14-8 deep; two screws; 3-cyl comp engs, 700 IHP; 2 B&W WT boilers; keel Feb16/22.

Ferryboat Pennsylvania Railroad, sister to above; keel Feb20/22.

Passenger vessel Inter - Island Steam Navigation Co., Honolulu; 345 long; 46 beam; 32 deep; 16½ speed; 4-cyl TE engs, 5000 IHP; 4 B&W WT boilers; to carry 434 passengers; keel June1/22,est.

### THE CHARLES WARD ENGINEERING WORKS, CHARLESTON, WEST VIRGINIA

Purchasing Agent: E. T. Jones.

Gen'l Frank M. Coxe, hull 17, river str War Dept; 144 LBP; 28 beam; 9 loaded draft; 16 miles loaded speed; 175 DWT; TE eng, 1050 I HP; 2 Ward WT boilers, 2094 sq ft heating surface; keel July 16 / 21; launch Mar3/22.

Gen'l John McE. Hyde, hull 18, river str War Dept; sister to above; keel July18/21; **launch Mar11/22.**

No name, hull 19, sternwheel towboat Pan American Petroleum & Transport Co; 136-6 LBP; 32 beam; 5 loaded draft; simple HP non-condensing eng, 18 in dia by 7 ft stroke, 250 lbs WP; 4 Miss River type boilers, 44 in dia; keel Mar15/22.

No name, hull 20, sidewheel car ferry Missouri-Illinois R R Co, subsidiary of St. Joseph Lead Co; 285 LBP; 54 beam; 5 loaded draft; 820 DWT; simple HP non-condensing eng, 22 in dia by 8 ft stroke, 200 lbs WP; 6 Miss River type boilers, 44 in dia.

# News of the Yards

The steamship Annette Rolph was the first vessel to be hauled out in the drydock of the San Pedro works, Bethlehem Shipbuilding Corporation. The dock was recently towed to San Pedro from San Francisco. Evidently there was need of the new facilities, as vessels were waiting for the dock to go into operation.

Fuel oil burning equipment has been ordered for installation on a United States Army dredge located at Porto Rico. The equipment selected is the Bethlehem (Dahl) mechanical system built by the Bethlehem Shipbuilding Corporation, Ltd., and the installation is being made at Porto Rico. The order was placed through the office of the Second District, United States Army Engineers, New York.

On page 330, May number of Pacific Marine Review, appeared a statement that "the Alaska Steamship Company reported to have bought the motor-barges Dawnlite, Daylite, Sunlite and Moonlite . . .", etc. This should have read: "The Pacific Steamship Company is reported . . .". The report is confirmed, but the Pacific Steamship Company has made no announcement regarding the use of the vessels.

The Shipping Board is preparing for plans and specifications for the reconditioning and conversion of the steamships Agamemnon and Mount Vernon from coal to oil burners. The two vessels were formerly German liners. It is estimated that $7,000,000 will be required for the work. The vessels, on completion, will be placed on the run to English and German ports.

The Red D Line, operating between New York and Venezuela, is reported to be considering the construction of two passenger and cargo vessels of 6000 to 7000 tons.

The New England Oil Refining Company of Boston is reported to be contemplating construction of ten or more steel tankers, light-draft type, 350 feet in length, for Venezuelan service.

L. E. Geary, naval architect, Seattle, has drawn plans for a 90-foot, triple-screw motor yacht for C. D. Stimson, Seattle. Plans also in progress for a 58-foot auxiliary schooner-yacht for F. C. Hubbell of Des Moines, Iowa.

The famous monitor Monterey, which until recently was stationship at Pearl Harbor, was sold recently to a junk dealer and will be dismantled on the Pacific Coast. She was built at the Union Iron Works in San Francisco in 1893 and was the first steel warship constructed on the Pacific Coast.

The Luckenbach Steamship Company will recondition the freighter Poznan, recently purchased of the Shipping Board.

Thirty-two old vessels of the Japanese navy were stricken from the list April 1 and will be scrapped during the year. They are as follows: Second - class coast - defense ship Chiyoda, 2439 tons; mine-layer Tsugaru, 6630 tons; first-class coast-defense ships Suwo, 12,674 tons, and Iwami, 13,516 tons; second - class coast-defense ships Mishima, 4960 tons; Hashidate, 4277 tons, and Okinoshima, 4126 tons; third-class destroyers Shiranui, Kagero, Usugumo, Shiragumo, Asashio, Murasame, Asagiri and Fubuki; first-class torpedo boats Shirataka, Kari, Aodaka, Mozu and Tsubame; second-class destroyers Nos. 67, 68, 70, 71, 72, 74 and 75, and four third-class torpedo boats. The Tsugaru is the former Russian Pallada, the Suwo the Russian Pobiedu, the Iwami the Russian Orel, the Mishima the Admiral Sengavin and the Okishima the Admiral Graf Apraxin. The dates of construction of all the vessels range between 1898 and 1903, except the destroyer Fubuki, which was built in 1905. Ten capital ships to be destroyed under the recent treaty will be scrapped within eighteen months, it is reported. Two battle-cruisers will be converted into airplane-carriers.

The ferry service vessel Jufuku Maru was launched at the Mitsubishi plant in Kobe April 1. The Jufuku Maru is a sister of the Keifuku Maru, recently launched in the same yard. Each is of 3500 gross tons. The Prince of Wales was the first passenger on the Keifuku Maru. The vessels will run between Shimonoseki and Fusan.

A 10,000-ton drydock was recently towed from the Erie Basin plant of the Todd Shipyards Corporation to the shipyards recently purchased by the Todd Corporation from the Mobile Shipbuilding & Drydock Company at Mobile.

The shipbuilding yard at Cockatoo Island, Australia, has been closed and most of the employes dismissed. Two thousand men were employed at one time.

Five marine diesels built for the Shipping Board have been sold, two being of 900 shaft horsepower and three of 750, and thirty-one have been stored as follows: five 750 S. H. P. McIntosh & Seymour trunk-piston, sixteen 900 S. H. P. McIntosh & Seymour crosshead, ten 825 S. H. P. Pacific Diesel Engine (formerly Skandia - Pacific Oil Engine Company), Werkspoor type, crosshead. All are four-cycle, direct-reversible.

The Allen-Johnson Company has been organized at Tampa, Florida, to take over the complete equipment of the Daniels Shipyard. The company will build wood or steel ships of any tonnage.

Negotiations are in progress for

the purchase of the McDougall-Duluth Shipbuilding Company, Duluth, Minnesota, by the United States Steel Corporation in behalf of its subsidiary, the American Bridge Company. The plant is now idle, but if purchased will be reconstructed by the Steel Corporation for a fabrication plant, at which would be made structural steel forms for buildings and bridges. Some of the machinery now in the plant would be suitable for this work and additional machinery would probably be purchased. If the deal goes through it is claimed that this will represent the largest property transfer that ever was consummated at Duluth. The Duluth fabricating plant will distribute its products to all sections of the Northwest and will be an active competitor of the Minneapolis Steel & Machinery Company.

About 180,000 gross tons of steamers will be constructed in Japan during the year 1922, it is estimated. Of the vessels to be constructed the Yokohama Dock is expected to build two steamers for the Nippon Yusen Kaisha and a 1500-ton refrigerator ship for Kuzuhara & Company; the Uraga Dockyard Company a 3500-ton collier for the Hokkaido Colliery & Steamship Company, one pleasure ship for the Tokyo Bay Steamship Company, two passenger steamers for the Hakodate - Aomori Channel service maintained by the railway department; the Osaka Iron Works two steamers for the Osaka Shosen Kaisha, one for the Tokyo Bay Steamship Company, one each for the Department of Communications, the Mitsubishi Company, and the Kuhara Company. Stock vessels are on this year's programs of the Kawasaki Dockyard and the Harima Shipbuilding Yard. The amount of iron stored by various shipbuilding yards in Japan is estimated roughly at 200,000 tons, or more than will be needed.

# Recent Repair Work

## Recent Repair Work

### BETHLEHEM SHIPBUILDING CORPORATION, LTD.

### Union Plant

Miscellaneous: S. C. T. Dodd, El Segundo, S. O. Barge No. 95, F. H. Hillman, Richmond, Daisy Freeman, W. S. Rheem, Richmond, Virginia Olsen, Catherine G. Sudden, Edna, Jacob Luckenbach, George L. Olsen, Hawk, Loch Katrine, San Pablo, Nanking, Mexico, Simaloer, Claremont, Thomas Crowley, Siam, Anatina, Atlas, Broad Arrow, Creole State (extensive), John C. Kirkpatrick, Multnomah, Cricket, Lurline, Valparaiso, Wilhelmina, Moonlight, Trident, Whittier, Avalon, Baja California, Asia, U. O. Barge No. 1920, Caspar, Stockton, Montana, Waikawa, Sonoma, Providencia, Hattie Luckenbach, Manulani, Bergen, Acme, Admiral Evans, Wellesley, Sea Rover, Hauraki, Colombia, Manukai, Harry Luckenbach, George L. Olsen, La Purisima, Liebre, China Arrow, Catherine G. Sudden, Wabash, Annette Rolph. Propellers: Mayfair, Enterprise, Maricopa, Atlas (blade only), Yale (2), K. R. Kingsbury (blade only), S. C. T. Dodd (4 test pieces), Willpolo. Pump parts: F. S. Loop, La Purisima. Wildcats: Argyll (2), San Joaquin (2). Alterations to quarters: Maui. Hull repairs: Wheaton (extensive), Broad Arrow (testing), Stockton. Miscellaneous parts and equipment: F. S. Loop, Sonoma, West Mahwah, Royal Arrow, Romulus, Paporoka, Oleum, Frank H. Buck, Angel, San Pedro, Hegira, Mexican. Tailshaft: Florence Olsen, Willpolo. Engine repairs: Los Angeles. Boiler repairs: San Pedro, Santa Monica.

### MOORE SHIPBUILDING COMPANY, OAKLAND, CAL.

Drydocking, cleaning, painting, hull repairs: Emily F. Whitney, W. C. Fish No. 1, Florence Luckenbach, Sonoma, Beulah, San Juan, Margaret, Bohemia, Tamalpais (also engine repairs). Boiler repairs: Petroleum, Brooklyn, Hawkeye State (also engine). Drydocking, cleaning, painting: Star of Zealand, Cazadero, Star of Iceland, Star of Greenland, Star of Holland, Star of England, Star of India, Rolph, Star of Italy, Star of France, Philippine, Samar, Luzon, Invincible, Crockett, Forester, Commerce, Rufus E. Wood, Fox, West Faralon, West Montop. Engine, boiler, hull repairs: Shabonee, Jim Butler, General McDowell (also drydocking). Deck and engine repairs: Arakan, Oriental (also boiler). Drydocking, miscellaneous wheel work: Georgina Rolph. Engine and copper pipe work: St. Louis. Drydocking and hull repairs: City of Martinez. Drydocking, cleaning, painting, miscellaneous repairs: Costa Rica, Ecuador, Thomas, Grays Harbor. Engine repairs: Celestial, Delagoa Maru, West Jappa. Repairs to cargo booms: Hollywood. Retubing donkey boiler: Tiverton. Making and installing new smokestack: Yerba Buena. Miscellaneous repairs: Bear. Deck and hull repairs: Wolverine State. Drydocking and unshipping rudder: Madrona.

### NAVY YARD, PUGET SOUND

Miscellaneous repairs: Pennsylvania, Seattle (preparation for commissioning), Nitro, Delphy, Chauncey, J. F. Burnes, Somers, Percival, Farragut, Fuller. Docking and installation of rudder and propellers: Milwaukee. Docking and miscellaneous repairs: Silver State, Pine Tree State, Wenatchee. Miscellaneous repairs incidental to operation as district craft: Eagle 57, Sotoyomo, Mahopac, Tatnuck, Iroquois, Pawtucket. Care and preservation: Oregon, Missoula, Charlotte.

### TODD DRY DOCKS, INC., SEATTLE

Miscellaneous repairs: Kaisha Maru, Washington, Tacoma (also survey), Janet Dollar, Toyama Maru, Hector, Yorba Linda (minor), Fulton. Pipe line repairs: Falls of Clyde. Engine repairs: Ixion, Hoboken, Iyo Maru. Bottom damage repairs: Narenta. Cleaning and painting: John A., Benjamin F. Packard (also survey), Forest T. Crosby, Contra Costa, Arthur Rust, C. S. Holmes, Admiral Dewey, Azalea, Washington T. & B. barges 31, 38, 52. Cleaning, painting, miscellaneous repairs: Skagway, Gleaner. Steam line repairs: Forest Friend. New cargo boom: Toyooka Maru. Fuel oil burning parts: Ruth Alexander. General overhaul: Northwestern.

### WINSLOW MARINE RAILWAY & SHIPBUILDING COMPANY, WINSLOW, WASHINGTON

Drydocking, cleaning, painting, miscellaneous repairs: Sophie Christenson (also installing new water tanks), Bolcom No. 12, Pioneer No. 11, Elwell. General overhauling, per government specifications: U. S. L. T. Cedar. Drydocking, cleaning, painting, general overhauling: Yosemite (also renewing shoe), Maud (preparatory to voyage to North Pole). Drydocking, cleaning, painting, new bowsprit, new foremast, overhauling rigging, hull and keel repairs: Helene.

### YARROWS, LTD., VICTORIA, B. C.

Minor repairs: Restorer (engine), Baychimo. Evaporator repairs: Madawaska. Docking, cleaning, painting, underwater repairs: Hercules. Docking, cleaning, painting, drawing tailshafts, propeller and rudder repairs: Canora. Docking, scaling, cleaning, painting, repairs to hull and Port A bracket: Princess Victoria.

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## New Companies

The Union Marine Service Corporation has been chartered at Fairfield, Maryland, capital $300,000. Incorporators are: Rupert C. Cowles, Charles Hoffman, Frank J. Whalen. The company will engage in ship repairing.

Los Vecinos, Ltd., has been incorporated in California with a capital of $5,000,000 to operate combination vessels between Los Angeles and ports of Mexico and Central America. John C. Allen is organizer and president and general manager.

# STEAMSHIP OPERATIONS AND HARBOR WORK

## Shipping Notes

Williams, Dimond & Company, American-Hawaiian agents, announce that arrangements have been completed with the New York Central Railroad whereby l. c. l. shipments will be delivered to piers at New York, thus eliminating the former transfer charge of 8 cents a hundred pounds. Only shipments moving over the New York Central are affected. The westbound service of the American - Hawaiian hereafter will provide a weekly sailing from Boston instead of a fortnightly.

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The Shipping Board combination vessels Aeolus and Huron, to be operated by the Los Angeles Steamship Company between Los Angeles and Honolulu, will be renamed City of Los Angeles and City of Honolulu.

* * *

The Luckenbach Steamship Company has purchased the steamships South Bend and Marica, 8739 gross tons, and Edelynn, 8713 gross tons, of the Shipping Board. All were laid down by the Sun Shipbuilding Company for Luckenbach, but were commandeered. The Eastern Soldier, 6750 tons gross, built by the Harima Dockyard Company, Japan, and the ex-German Poznan also have been bought of the board by the Luckenbach Line. The purchase of the Eastern Soldier is a decided compliment to the Harima yard, as J. L. Luckenbach, vice-president of the steamship company, was J. A. McGregor's assistant in overseeing the construction of all vessels in Japan and China for the Shipping Board and therefore was in a position to know the quality of each craft.

* * *

Two fast trans - Pacific passages have been made by sailing vessels. The four-masted bark William Dollar arrived at Port Townsend April 28, thirty-one days from Shanghai; and the four-masted barkentine S. F. Tolmie arrived at Royal Roads May 7, thirty-three days from Kobe.

* * *

Under new rules of the Atlantic Intercoastal Conference, effective on May 15, regular westbound rates will apply to shipments destined to Seattle, Portland, San Francisco, Oakland and Los Angeles, differentials being imposed against other ports. Protests have been made by the smaller cities.

* * *

The Portland Dock Commission has under advisement a reduction in the cost of loading wheat, from pile to ship, from 35 to 25 cents a ton. If inaugurated, the plan will be tried out at Terminal No. 4.

* * *

Federal authorities in Australia are reported to be considering the establishment of a commission, similar to the United States Shipping Board, to administer the affairs of the Commonwealth Steamship Line. Those opposing the establishment of the commission cite the inefficiency of governmental management and the dangers of political control.

* * *

The Oregon-Pacific Company has been appointed Portland and Astoria agent of the Williams Line, succeeding A. C. Callan.

* * *

The Cunard Line has issued the following statement: "The Mauretania has just created a world's record trip to Cherbourg, passing Ambrose lightship at 1:50 p. m. Tuesday, April 25, and arriving at Cherbourg at 3:46 a. m. Monday, May 1, a total distance of 3242 nautical miles, at an average speed of 25.14 knots an hour, passengers thus arriving at London and Paris on the sixth day of the trip. The official time of this record trip to Cherbourg is 5 days, 8 hours and 56 minutes."

* * *

The Eagle Transportation Company and the Submarine Boat Company are reported to be about to enter the United States intercoastal trade.

* * *

Forty Pacific Coast shipping companies, members of the Shipowners' Association of the Pacific Coast, recently increased wages of workers approximately $5 a month each with bonuses averaging from 5 to 10 per cent a month, applying to those whose continuous employment includes six months. The action follows similar awards by the Standard Oil Company and the Matson Line. The San Francisco Waterfront Employers' Union has increased stevedores' pay to 80 cents an hour, regular work, and to $1.20 for overtime.

* * *

The first of a series of hearings on Section 28, Merchant Marine Act, scheduled for the Pacific Coast, will be held in Los Angeles about July 6 by Commissioners Thompson, Benson and Chamberlain and a representative of the Interstate Commerce Commission.

## Harbor Development

**Portland Harbor**—The port of Portland commission, Portland, Oregon, has held a series of meetings with property owners of the Guilds Lake district, Willamette River, to outline a plan for channel work on the west side of Swan Island, the fill to be made on Mocks Bottom. Improvement districts will be organized and property assessed to provide funds for the work.

**Long Beach Bond Issue**—Voters of Long Beach, California, defeated two issues for harbor improvements on April 19. The electorate declined to approve the purchase of certain acreage from the Los Angeles Dock & Terminal Company for $2,000,000. The other defeated measure provided $500,000 for general harbor improvements.

**Tokyo Bay, Sumida River**—It is reported that the city assembly of Tokyo has appropriated yen 6,800,000 for dredging work in Tokyo Bay and the Sumida River. Wharves will later be erected along the Sumida. Five years will be required to complete the program.

**Wellington Harbor**—Plans have been prepared by the Wellington harbor board for extending the Thornton breastwork by 965 feet, the new work to be 45 feet 3 inches wide. The work will be undertaken in conjunction with the Thornton reclamation, provided tenders are received. Dredging at the Thornton breastwork will be undertaken with the dredge Whararire. The Wellington harbor board has issued specifications for the extension of the Miramar wharf, 200 feet, width 63 feet 4 inches. It is proposed to install overhead, electric traveling cranes in the "U" store.

**Los Angeles Coal Plant**—D. C. Sweet has filed application with the Los Angeles harbor board for permission to install a coaling plant. The board is requested to construct an open wharf having a capacity of at least 750 pounds a square foot, served with railroad tracks, and a covered shed about 100 feet by 200.

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**Arthur E. Arledge**, chief of the United States lighthouse service in Hawaii for ten years, has resigned. He will engage in business in the islands.

**M. B. Claussen**, former advertising manager of the Shipping Board, has resigned. Mr. Claussen had been selected by the Shipping Board, after being relieved of his duties as advertising manager on account of ill health, to be sent to the various ports on the Pacific Coast and in the Orient with the view to reporting conditions there with respect to the trans-Pacific passenger services of the board.

# Pacific Marine Review

The National Magazine of Shipping

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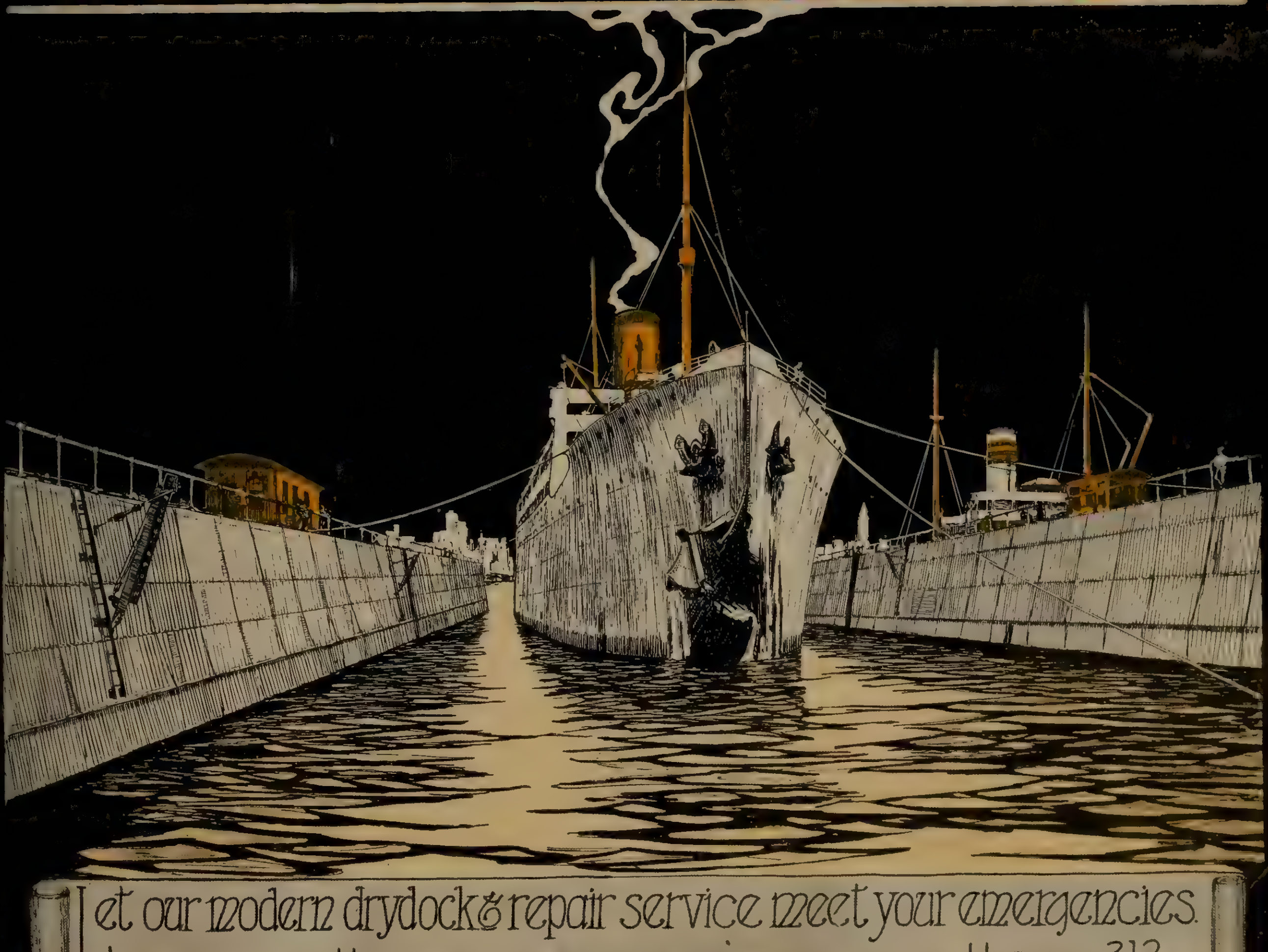

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Pacific Marine Review, Vol. 19, No. 7. Published Monthly at San Francisco. Entered as second class matter at the post office at San Francisco under the Act of March 3, 1879. $3.00 a year.

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# Pacific Marine Review

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**J. S. HINES**, Publisher
**B. N. De ROCHIE**, Business Manager
**A. J. DICKIE**, Editor
**ANDREW FARRELL**, Associate Editor
**L. R. MERRICK**, Field Editor
**M. G. HEDIN**, Advertising Manager

339 at No. 30 Church Street,
New York City

PACIFIC MARINE REVIEW,
THE NATIONAL MAGAZINE OF SHIPPING
576 Sacramento Street, San Francisco

500 Citizens National Bank Building,
Los Angeles

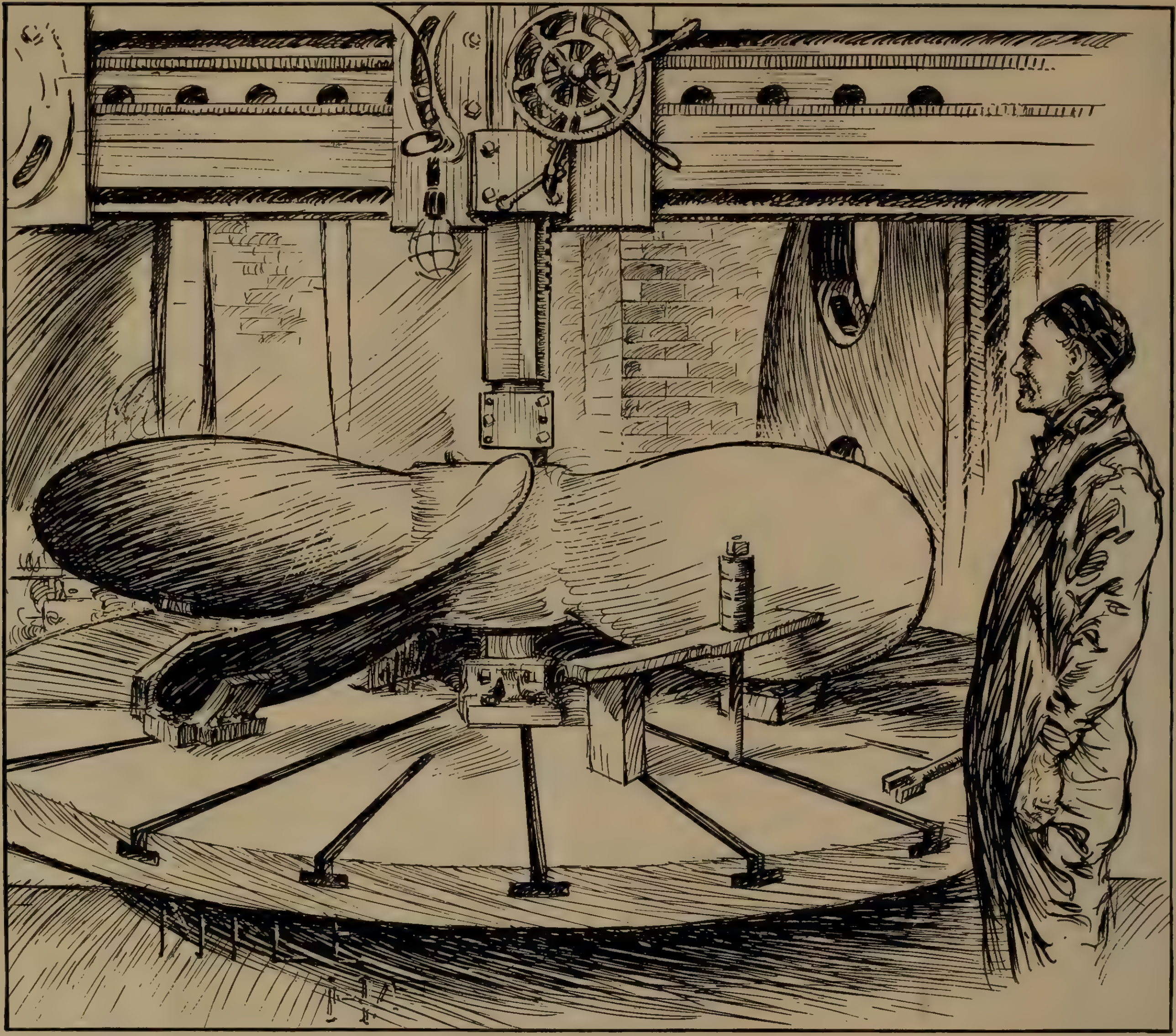
Official organ of the Pacific American Steamship Association

Entered as second class mail matter June 20, 1913, at postoffice, San Francisco, under the act of March 3, 1879.

Subscription price, a year (domestic) ........ $2.00
(foreign) ........ 3.00
Single copies ........ .25

Published on the fifteenth of each month. Advertising forms close on the tenth and editorial forms on the twelfth.

Entire contents copyright, 1922, by J. S. Hines.



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*That holds, in spite o' knock and scale, o' friction, waste an' slip,*
*An' by that light—now, mark my word—we'll build the Perfect Ship."*
—*Kipling*

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Pacific Marine Review
The National Magazine of Shipping
July, 1922
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A. J. FREY

Born in Heidelberg, Germany, June 6, 1875. Died in Baltimore, Maryland, June 13, 1922. His family removed to the United States in 1883 and Mr. Frey was reared in California. He was, in succession, secretary to R. P. Schwerin, the general manager of the Pacific Mail; assistant general manager of that company; manager of the Portland & Asiatic, Occidental & Oriental and San Francisco & Portland steamship lines; organizer of the China Mail Steamship Company; reorganizer of the purchasing and supply departments of the Associated Oil Company; assistant district manager of ship construction in California for the Emergency Fleet Corporation; district manager; vice-president and general manager of the Los Angeles Steamship Company; vice-president of the Emergency Fleet Corporation in charge of physical operations.

## The Board of Lexicographers

FOR another month a strike of longshoremen at Portland, Oregon, has dragged on. For another month the Shipping Board has displayed a remarkable conception of neutrality. What this conception is the Waterfront Employers' Union sets forth in a public statement: "Working rules governing labor prior to the strike required all men to be employed through the agency of the union hall. Continuing to work vessels in this manner after the strike is supporting union men only; in view of which we cannot understand the Shipping Board's statement that it is maintaining a position of neutrality and favoring neither side. . . ." In order for anyone to understand the board's attitude he would be compelled to attribute a new meaning to "neutrality". It does appear, however, that Chairman Lasker and other members of the board, in assuming the functions of a Johnson or Webster, are primarily to blame, and that J. C. Jenkins, the board's representative, for the most part followed orders.

But it is gratifying to note that the government vessels that lay idle at Portland finally have sailed. After the employers had bowed to a demand of the board that its vessels be worked by men employed at a neutral hiring place, a joint committee representing the union and the employers was appointed, men were selected and work was resumed May 22. The West Keats, one of the delayed steamships, sailed for the Orient May 28. Work had been halted May 8, when two hours would have sufficed to complete loading. She was delayed, therefore, twenty days, and moreover lost a considerable amount of cargo, 2000 tons of copra, which she was booked to take at Manila on her return voyage, having been cancelled because of her long stay at Portland.

This may be the manner in which the taxpayers of the United States wish their vessels operated.

## Americanizing the Labor Organizations

ALL truly democratic institutions are based on the two opposite and co-limiting ideas of liberty and responsibility. Every native born American citizen is born to liberty—personal, inalienable, precious and glorious liberty. He is also, by the very fact of that birthright, born to responsibility. He has entered into a great corporate body of American citizenry, bound together with many tyings of established order and custom, for the purpose of preserving that liberty.

Therefore you and I are free to live and grow and earn our daily bread, and stretch our limbs here in the glorious sunshine just so long and so far as we are prompted by our heart's desire and as we are limited by our neighborhood responsibility for the greatest common liberty. This was and is the ideal liberty toward which the great heart of America has been and is today striving.

Now the attainment of this ideal is by no means easy. The simplest units of organized society find it well-nigh impossible to preserve a uniform adjustment between liberty and responsibility, and the great majority of these units are faced with the necessity of restraining liberty in certain directions and increasing responsibility in others. The history of the progress of American institutions has therefore become largely a record of the progress of adjustment.

The latest effort at adjustment, and not perhaps the least important, is the Supreme Court ruling that acknowledges the liberty of labor organizations to strike, and declares the responsibility of the organizations for any damages incident to such strike. This in effect gives to the labor organization the same responsibility under law that attaches to corporations.

Many leaders of labor are fiercely opposing this decision, just as they have always opposed incorporation of the union. Their opposition is a mistake. The wise labor union leader and the conservative element in the ranks of the organizations will recognize the fact that this ruling is a logical and perfectly legitimate outgrowth of their own activities and growing strength in the life of our great political corporate union. These activities and this strength have during the past twenty-five years so increased that the guise of liberty as worn by the representatives of labor unionism has assumed the attitude rampant, and it has become necessary to place a burden of responsibility upon the shoulders of that rampant liberty that she might (so to speak) be brought down again to level of the common weal.

This ruling, therefore, far from being a "death blow to labor", should, if properly followed up, tend to greatly strengthen labor. It should purge the ranks of labor from all undesirable elements, raise the standard of leadership, and create a desire to make expertness in craftsmanship a necessary qualification for full membership. In short, union labor motivated by the spirit of this decision may now clean house, and take rightful place among the constructive factors of our progress toward the ideal America.

## No "Subsidy" Involved

IN resolutions adopted by the International Seamen's Union of America at the convention held in Chicago in January appears one statement that, unlike others made by the union, commends itself to the shipping public. "We favor any just mail subsidy on the ground that such is not a subsidy but payment for work performed," said the union.

The words are applicable in full to the mail contract proposed for the Oceanic Steamship Company in order that it may maintain its service between San Francisco, Honolulu, Pago Pago and Sydney. The truth is that the Oceanic has suffered because payments made to it by the government were denominated as "subsidy" or "subvention", whereas they were nothing of the sort, but were "payment for work performed." It would be unfortunate if the agreement arrived at by the company and the Postoffice Department for submission to Congress were to be confused in any particular with the Subsidy Bill, because, however much the American merchant marine in general needs aid, however just the subsidy plan may be, the Oceanic contract stands on a different basis and commands, or should command, support even from those who oppose any form of governmental assistance.

How important the company's Australasian mail service is may be gathered from this fact: Sydney newspapers of April 16 were delivered in San Francisco

May 31. Doubtless first-class mail receives quicker dispatch, but in any event sailings between the United States and Australia are infrequent enough and without the Oceanic vessels would be miserably inadequate. There also is American Samoa to be considered, for Pago Pago is completely dependent upon the Oceanic for communication with the United States and if the company were to withdraw its vessels the Navy would be compelled to open a service. Inasmuch as official Washington has had ample time to consider all phases of the situation there is no reason whatever why the contract bill should not pass immediately.

## Japanese Operating Costs

THE 1921 number of "Past and Present", an annual publication of the Osaka Shosen Kaisha, indicates that expenses of Japanese steamship lines have grown within the last few years altogether out of proportion to the increase of revenue. Although the company justly felicitates itself upon its excellent position and the extraordinary progress it has made since its foundation thirty-eight years ago, a table entitled "the condition of revenue and expenditure for and after 1914" does impel one to the conclusion that the palmiest days of Japanese shipping, the days of almost incredible profits, are drawing to a close. The primary reason for such a belief is found in the fact that the O. S. K. returned net profits last year of two million yen out of revenues of 59 million, whereas in 1918 it earned a net of 42 million out of 168 million revenue. In fact, the net of 1921 was even less than that of 1914, when the revenues were 19 million, or less than one-third what they were last year.

What has been said is not to be interpreted as questioning the stability of the O. S. K. or as being tantamount to an assertion that American companies are able to compete with the Japanese line. The O. S. K., as everyone knows, is in an excellent position and could return a profit when a company operating under the United States flag would show a loss. But it is evident that Japanese costs of operation and maintenance are manifesting a marked reluctance to fall as rapidly as revenues. In that fact there is a large grain of comfort for the rest of the shipping world.

## The Twilight of the Tramp

IN his testimony before the joint Congressional committee holding hearings on the Subsidy Bill, Frank C. Munson made a statement that summarizes the beliefs of many of the younger generation of ship-operators but goes counter to the tenaciously-held opinions of the older crew. "I think that the fast freight liner and combined passenger and freight liner is going to gradually absorb the regular routes of the world to a much greater degree in the next twenty years," said Mr. Munson. "I would say within ten to fifteen years we will see not over one-half of the trade of the world carried in tramp tonnage" instead of 66-2/3 per cent now handled by that class.

Mr. Munson's statement is all the more impressive when one considers the fact that his vessels operate on the Atlantic, where the passenger vessel has left little room for the combination steamship and therefore has tended to develop a straight cargo trade. On the Pacific, however, the combination vessel holds an undisputed leadership; it held that place long before the war, and in these times of depression manifests its supremacy all the more strikingly. But there also are excellent freight liner services that are making the life of the tramp miserable. That is true in trans-Pacific trades; it is true to an unparalleled degree in the United States intercoastal trade, where the wandering vessel may be said to be unknown. The fact is that the one function of the tramp is to transport bulk cargoes, usually of seasonal goods that move in large quantities, grain being a notable example. It is probable that the tramp will continue to command such business; yet it is likely to lose much bulk freight of a non-seasonal nature to the liner, as it has surrendered lumber, phosphate rock and other commodities that the liner needs as ballast freight.

Shipowners will turn more and more to the employment of their vessels in regular trades. To what extent they will do so, to what degree they will force other operators to follow their example, offer two interesting studies.

## Full Many a Gem

ONE who writes accounts of baseball games for the newspapers is expected to know something of the game. Similarly, a dramatic critic, although not necessarily a rival of Irving or Forbes-Robertson, should be not altogether ignorant of the theater. May not something of the same nature be said of representatives and senators who presume to hold hearings on the Subsidy Bill? Are they under no obligation to learn something of the business for which they are to legislate? That it is time these questions were asked is evidenced by the following bits culled from the record of hearings:

First representative: Deadweight is about twice as much as gross.

Second representative: No, it is the other way, is it not? . . .

First representative: I thought deadweight was the weight of the water displaced by the vessel after she was loaded.

* * *

Another representative: Mr. Ferguson, does your contract for reconditioning the Leviathan provide for motorizing the vessel? . . . As a matter of fact, if it had been determined there was a distinct saving in the motorization of ships it would have been a good time to commence on the Leviathan when they started reconditioning her, would it not?

* * *

Still another: You mentioned the Royal Mail Steam Packet Company. Was that an American line?

* * *

The same: Suppose a line, or a steamer, made the contention, "we are engaged in the foreign trade with the Hawaiian Islands or the Orient" . . .

* * *

A newcomer: Under the arrangement they were getting—under the arrangement for these chartered vessels, the M. O. contract, they were getting 10 per cent on the gross cost of operation, weren't they?

# PASS THE SUBSIDY BILL NOW!

## President Opposes Delay and a Great Majority of the People of the Country Uphold His Stand

NO legislation before Congress within recent years has commanded such support as is being accorded the Subsidy Bill. This support is literally nation-wide; it comes from the inland as well as from the three coasts of the United States; most important, all sorts and conditions of men have approved the bill and requested its early passage. Of the few dissenting voices not one represents a commercial organization; in other words, the chambers of commerce and manufacturers' associations and such bodies appear to be unanimously in favor of the act. For the most part the larger newspapers of the country endorse the measure, as the National Merchant Marine Association reports that nearly 75 per cent are supporting it. Finally, a most encouraging sign is the fact that partisanship in Congress itself appears to be forgotten to almost an unprecedented degree.

### What the Farmers Think

So vigorous is the sentiment of the country that even those who oppose subsidy as a matter of principle are falling into line. They are convinced that direct aid offers the only immediate hope of placing the American merchant marine on its feet and for that reason are willing to forego their economic objections and permit the plan of the President and Chairman Lasker to be given a fair trial. Perhaps the attitude of these men has been expressed best by J. R. Howard, president of the American Farm Bureau Federation:

"Today we have a vast fleet, but government operation is costly and a temptation to everyone concerned in it. No private operator will take over these ships unless he has assurance of building up a steady volume of business and is sure of meeting the differential in operating costs in favor of the foreigner. For that reason we favor the direct aid provided in this bill until the American merchant marine can be established on the seas and no longer."

For the same reason William S. Brown, president of the National Marine Engineers' Beneficial Association, expressed the approval of his organization. "In view of the fact that the historic position of your association has been opposed to subsidies in principle," asked Representative Davis, "you would not be in favor of them if you felt that the problem could be properly solved along other lines, would you?" To this Mr. Brown replied: "No; I would say 'no, sir.'"

## America's Merchant Marine Champion

Photo International

The President who insists that Congress act now on the Subsidy Bill

### The Taxpayer's Interest

The millions of supporters of the bill realize that the country is confronted by a fact and not a theory. The discussion, therefore, is intensely practical. Academic speculation has little to do with it. From the standpoint of the citizen who is interested only as a taxpayer, who can see neither immediate good nor harm to his own interests, the bill merits support because it would get the government out of shipping and supply a national naval reserve. Even with less than 30 per cent of the Shipping Board fleet in operation (421 vessels of 1442) the direct operating deficit, or, as Chairman Lasker of the board put it, "the estimated cost to the treasury," during the year will be $50,000,000 aside from overhead, as against a maximum of $30,000,000 or so that would be expended under the subsidy plan. The estimated loss for the year is all the more disconcerting when one takes into consideration the facts that at one time the board was losing $15,000,000 a month and that a reduction to $4,000,000 has been made possible only by the most rigid economy, the postponement of repairs on laid-up ships and the employment of the best shipping men to direct the fleet. Another element entering here, which has had little attention, is that the saving to the government would be greater than is superficially apparent, inasmuch as such indirect losses as interest and depreciation, of which no account has been taken, would be ended in whole or part when a vessel was sold. In other words, even if the government were to sustain a great loss in selling for $30 a deadweight ton a vessel that cost as much as $200, the taxpayer nevertheless would benefit from the interest on $30, which is not being received today. Moreover, depreciation of the fleet is a continuing process, and the vessels, if not sold, eventually would be worth nothing; that is to say, whatever salvage can be had may be regarded as pure gain. But salvage is possible only if the fleet be sold, and sale of any considerable number of vessels, in the opinion of practically every competent shipping man of the country, is possible at the present time only on condition that direct as well as indirect governmental assistance be given. All attempts to charter any considerable number of vessels on the bareboat basis have been on the whole complete failures, so that, in order to maintain its services, the Shipping Board has been compelled to assume losses incident to operation under the MO4 agreement. Finally, although the board has been able to sell only a small portion of its tonnage, it has been compelled in several cases either to take back vessels for which purchasers could not pay or to consider a plan of reducing the prices of vessels already disposed of.

### The Army's Wasteful Transport Service

In another respect the bill would take the government out of shipping; it would end the wasteful transport service of the Army. Representative Edmonds, who is one of the foremost authorities of Congress on shipping, has stated that the service costs $5,000,000 to $6,000,000 a year more than commercial vessels would charge. When he says this he takes into consideration, of course, proper overhead, insurance, etc., which the Army has shown itself most loath to discuss. It need scarcely be pointed out that $6,000,000 is one-fifth of the proposed direct aid.

Aside from these considerations, there are others of probably greater ultimate importance. A great deal has been said of the impotence of the United States Navy without an adequate reserve of merchant auxiliary vessels. More than one witness at the joint hearings has cited the fact that when President Roosevelt sent the American battleship fleet around the world in 1908 it was accompanied by foreign colliers and supply vessels, without which it would have been powerless—in fact, could not have moved. For the Navy itself to build and own sufficient auxiliary vessels for any probable emergency would be manifestly impracticable and, even if practicable, would be enormously expensive. For proper support of the dreadnoughts and cruisers, therefore, a well-balanced fleet of merchantmen is essential: colliers, oil-tankers, fast liners and other types of vessels. The possession and maintenance of such a fleet is all the more imperative because the Pacific treaty by limiting the construction of capital ships made the merchantman a more commanding figure in the naval scheme of things than it had been since the introduction of armored vessels.

### More Vessels Needed

Not all the steamships needed for employment in times of peace or war are in the possession of the United States today. Chairman Lasker of the Shipping Board asserted that there was in both government and private fleets only 600,000 tons of passenger vessels, while the nation needed 1,250,000 tons; and that the aggregate tonnage of fast cargo vessels was only 390,000 as against a necessary total of 1,250,000. Other authorities might differ as to the amounts needed, but few would dispute the statement that the nation is deficient in both types as well as in refrigerator vessels. Regardless of the tonnage that should be built, it is manifest that not all the needed tonnage can be constructed at this time without direct assistance.

But those who do oppose subsidy might concede the truth of all or most of the statements heretofore made and still protest that in general foreign steamships should be permitted to carry our imports and exports if they can serve us more cheaply than can our own operators. If they should bring such an argument they would merely be repeating what has been urged upon the country for fifty years or more, and urged successfully, because as everyone knows American steamships had almost disappeared from the seas by 1914. Yet the war taught the United States several lessons, among which were that foreign trade was highly desirable, that in general manufacturing was more profitable than agriculture, and that, for both of the great branches of industry, an adequate merchant marine was positively essential. Nor does it suffice to urge that any merchant marine will answer. Those nations that possess tonnage comparable to that of the United States are the very nations that are our most dangerous competitors in the export of manufactured goods, even though, on the other hand, they are important purchasers of raw material such as cotton. To abandon an effort to maintain an American merchant fleet would be, in brief, to place ourselves at the mercy of Great Britain and Japan and in the near future of Germany as well. The result of such action conceivably might be the throttling of American export trade in manufactured articles, with the result that the enormous industrial organization built up during the war would be destroyed, the country would undergo another period of depression and would turn to agriculture again at a time when the long-heralded opening of interior China offers the prospect of enormous markets for all kinds of goods. It is quite true that all this deplorable consequence might not ensue, that not even the greater part of it might follow, but the dangers are too great to be run at this time.

### Stability Is Necessary

Low rates, again, are not necessarily the best. Within reasonable limits, what the exporter desires, especially the exporter of commodities as to which the United States has a great natural advantage, is stability. He must know what freight rates will be in order that he may make binding quotations to his foreign customers. Without some reasonable certainty, he is exposed to conditions that he cannot anticipate; but even if foreign lines, by reducing rates, should drive the American fleet from the sea, the exporter and importer eventually would pay the bill as they paid it during the war. Maintenance of an American merchant marine, even if temporarily at the cost of $30,000,000 a year, would appear to be the best guarantee against possible extortion in the future.

But the question may be asked as to why all these benefits of having our own fleet might not be gained without the payment of a subsidy. To this the answer might be made that costs of construction and operation have been and remain to this day considerably higher in the United States than abroad. Although opinions are practically as numerous as those who submit them, it appears that the wage differential is about 30 per cent, the capital about 3 per cent and the subsistence about $50 a man a year. The capital differential represents 15 per cent (interest, depreciation, insurance, etc.) of the increased cost of construction (20 to 25 per cent) in United States yards. Yet, although construction costs are higher here than abroad, it is necessary that shipyards be given employment, because, as Homer L. Ferguson, president of the Newport News Shipbuilding & Drydock Company, pointed out, little naval construction is to be expected within the next five or ten years, and if in the meantime yard organizations are not maintained the ability to produce replacement vessels for the Navy would largely disappear or be impaired gravely. The maintenance of shipyards becomes, therefore, an important element of national defense, and practically the only manner in which those plants can maintain themselves is by building for American shipowners.

### Regarding Mr. Furuseth

These various considerations have appealed to a great majority of those who have testified before the joint committee of the House and Senate. Few have opposed the bill. Perhaps the most conspicuous opponent has been Andrew Furuseth, president of the International Seamen's Union. Mr. Furuseth devoted most of his testimony to a discussion of the Seamen's Act, to comparative wages of American and foreign seamen and to criticizing both the Shipping Board and private owners for what he said was their failure to give preference to native American sailors. Except in his discussion of wages he did not meet the issue to any great degree, and even there his statements are countered by others of much greater plausibility and of greater apparent accuracy and authenticity. The true source of his opposition may be found in his statement that "the real wrong to the American merchant marine was the failure to give to the members of the seamen's organization any preference in shipping." Other assertions, especially those to the effect that shipowners have not encouraged Americans to go to sea, might be examined at much length, for there is good reason to believe that of all men Andrew Furuseth himself has done more to keep native-born sailors from our shipping.

Mr. Furuseth's opposition, however, dwindles when one considers the endorsement of such organizations as the Marine Engineers' Beneficial Association, the Masters, Mates & Pilots and the Neptune Association. They speak with more authority and the more convincingly because they have approached the subject with open minds and have not obscured it by dragging in their own grievances.

### Early Passage Demanded

To attempt to list other organizations behind the bill would be out of the question. They are too numerous. But it is worthy of note that, in the language of the National Merchant Marine Association, "the only section of the press unqualifiedly against the measure is the radical labor and socialistic."

More than one witness has urged certain changes, especially, as Frank C. Munson and Winthrop L. Marvin of the American Steamship Owners' Association did, that the subsidy for low-speed vessels be increased. Mr. Munson also suggested that classification in Lloyd's be resumed and that the Ocean Mail Act of 1891 be continued. These and other proposed amendments should be given careful consideration by the committee; but they are, after all, of relatively minor importance and they should not be permitted to hinder the bill as a whole. Early passage is highly desirable. Those senators and representatives who manifest a desire to delay passage until after the elections should be advised vigorously that public sentiment will not countenance such tactics.

## The Days of Glory, Bring Them Back

The United States flag floated over every sea when such vessels as the clipper ship Young America, here shown, were in their prime. History will repeat itself if Congress acts as it should.

The Young America was the loftiest ship that ever entered San Francisco Bay. The photograph probably was taken at Vallejo wharf.

# THE NAVY'S SCRAPPING POLICY

## Recommendations of Board Headed by Admiral Taylor, Chief Constructor, to Secretary Denby Made Public

A BOARD convened by order of Secretary of the Navy Denby to formulate a "scrapping" policy for disposing of capital ships under the Pacific treaty has reported to him and its findings have been made public, although, as J. L. Latimer, judge advocate general of the Navy, said in a letter to Representative Butler under date of May 2, "this report has not yet been considered nor approved by the secretary." It is, however, the well considered decision of a committee of six admirals headed by Admiral D. W. Taylor, chief constructor, and as such probably represents in large outline what the policy of the Navy Department will be.

### The Incomplete Thirteen

Six battle-cruisers and seven battleships still under construction hold the greater interest of both shipbuilders and the general public. The six battle-cruisers, the yards building them and the percentages of completion as of April 1 are as follows:

**BATTLE-CRUISERS**

| No. | Name | Building Yard | Percentage<br>Total | Percentage<br>On Ship |
|---|---|---|---|---|
| 1 | Lexington | Bethlehem S. B. Corp. (Fore River) | 33.8 | 24.2 |
| 2 | Constellation | Newport News S. B. & D. D. Co. | 22.7 | 19.5 |
| 3 | Saratoga | New York Shipbuilding Corp. | 35.4 | 28 |
| 4 | Ranger | Newport News S. B. & D. D. Co. | 4 | 1.5 |
| 5 | Constitution | Philadelphia Navy Yard | 13.4 | 8.4 |
| 6 | United States | Philadelphia Navy Yard | 12.1 | 7.1 |

The battleships are:

**BATTLESHIPS**

| No. | Name | Building Yard | Percentage<br>Total | Percentage<br>On Ship |
|---|---|---|---|---|
| 47 | Washington | New York Shipbuilding Corp. | 75.9 | 70.3 |
| 49 | South Dakota | New York Navy Yard | 38.5 | 31.2 |
| 50 | Indiana | New York Navy Yard | 34.7 | 27.2 |
| 51 | Montana | Mare Island Navy Yard | 27.6 | 19 |
| 52 | North Carolina | Norfolk Navy Yard | 36.7 | 27.1 |
| 53 | Iowa | Newport News S. B. & D. D. Co. | 31.8 | 27.4 |
| 54 | Massachusetts | Bethlehem S. B. Corp. (Fore River) | 11 | 4.3 |

### Two Airplane Carriers

The board recommended, as newspaper dispatches have said, that the two most advanced battle-cruisers, Lexington and Saratoga, be converted into airplane carriers. There doubtless will be general and enthusiastic approval of this proposal, for, as every naval officer knows, the United States lags far behind both Great Britain and Japan insofar as vessels of that class are concerned, and would have been placed at an even greater disadvantage as against Japan, which is reported to be planning the conversion of two 44,000-ton battle-cruisers, the Akagi and the Amagi, both of which are affected by the Pacific treaty.

As for the remaining four battle-cruisers, Constellation, Ranger, Constitution, United States, the percentages of completion (shown in the table) are so low that the board finds them too small "to contemplate launching. These vessels must either be disassembled or cut up". Presumably the distinction between "disassembling" and "cutting up" turns upon the care exercised—that is, whether an effort is made to remove plates and shapes intact or whether they are broken up for scrap. But, says the report, "in the case of battle-cruiser No. 2, building by contract, the board recommends that the vessel be sold on the stocks if practicable. Otherwise that it be cut up under the present contract and the scrap disposed of." It is evident that, the Lexington and the Saratoga having been selected for airplane carriers, the Constellation, or No. 2, offers the only opportunity of converting a battle-cruiser into a passenger liner, for the percentages of completion of the three remaining vessels are too small to warrant serious consideration of any course other than scrapping. Regarding the vessels the board continues: "Usable material to be disposed of in accordance with the requirements of the bureau concerned. In the case of battle-cruiser No. 4, the only work involved to clear the ways is the disassembling of a few keel plates. In the case of battle-cruisers No. 5 and No. 6, at the Philadelphia Navy Yard, the board recommends that the hulls now on the stocks be sold as they stand to commercial firms."

### Regarding the Battleships

These recommendations having disposed of the battle-cruisers so far as the board is concerned, it turns its attention to battleships and recommends that "the battleship Washington, building by contract and launched, be sold for scrapping in accordance with the terms of the treaty." Besides the Washington, six great battleships of the 43,200-ton South Dakota class remain to be scrapped. "The percentage of completion of the above battleships is too small to contemplate launching," says the report. "These vessels must either be disassembled or cut up. The board recommends that the hulls of battleships Nos. 49, 50, 51 and 52, building at navy yards, be sold on the stocks. The board recommends that the hulls of battleships Nos. 53 and 54, building by contract, be sold on the stocks if practicable. Otherwise that they be cut up under the present contracts and the scrap disposed of."

### Old Vessels to Go

In addition to the thirteen capital ships still under construction, eighteen completed vessels are doomed. They are as follows: second-line battleships Virginia, New Jersey, Rhode Island, Georgia, Nebraska, Connecticut, Louisiana, Vermont, Minnesota, Kansas, New Hampshire, Michigan, South Carolina, and either of two dreadnoughts, the Delaware or South Dakota, the other to be used, so the board recommends, as a target; and also to be scrapped, although they are not listed in the treaty, are the second-line battleships Kentucky, Ohio and ex-Iowa, now CB-4. Inasmuch as the Maine and Missouri have been sold, and the Oregon has been or will be made non-combatant, and other vessels used as targets, the entire fleet of predreadnoughts, and the early dreadnoughts South Carolina, Michigan, Delaware and South Dakota, will have been destroyed. The South Carolina and Michigan, it is interesting to recall, were the original "dreadnoughts", for they were projected prior to the British Dreadnought, although laid down after she was.

### Cost About $70,000,000

Two paragraphs of the board's conclusions follow:

"XI. The board recommends that settlement under all contracts and subcontracts be made by the contracting agencies as soon as possible. A preliminary estimate of the cost involved under all appropriations is $70,000,000. Should this amount be made available by a special appropriation without delay, it would enable a prompt settlement to be made, thereby effecting a material saving of money."

"XIII. In addition to suggestions from various sources, the following practicable methods of disposition were considered by the board:

"(a) Sinking at sea, (b) selling outright to highest bidder, (c) selling for destruction in a navy yard or private shipyard on a percentage basis, and (d) destruction in a navy yard by the government.

"The board recommends the procedure under (b) above, that the vessels be sold outright to the highest bidder."

# AMERICANIZE OUR CHARTS

## Captain Bassett, Navy Hydrographer, Urges That We End Our Dependence on the British Admiralty

**While millions of dollars are being sought for a subsidy for the United States merchant marine, Congress might profitably give serious consideration to a request much more modest but of importance altogether incommensurate with the amount involved. Captain F. B. Bassett, U. S. N., hydrographer, Hydrographic Office, has pointed out to the chief of the bureau of navigation and the secretary of the navy the singular situation in which American shipping, both naval and merchant, finds itself, of being largely dependent upon the British Admiralty for charts. Even though charts always were obtainable (as they might not be, however), a great saving could be made in the expense incurred by the Navy and merchant shipping if the Hydrographic Office were equipped to supply all needed issues. Private shipowners should take cognizance of the situation disclosed in the letter of Captain Bassett, printed herewith, and urge Congress to appropriate the needed funds.**

FOR several years the Hydrographic Office, United States Navy, has been inviting the attention of congressional committees to the dependence of the United States on the British Admiralty for charts of a large portion of the globe. Apparently the office's representations have been of no avail; but now Captain F. B. Bassett, hydrographer, comes forward with another statement of facts, which may be more efficacious, especially in view of the effort being made to place the United States merchant marine on a solid basis. Captain Bassett outlines the situation in a letter to the chief of the bureau of navigation and the secretary of the navy. It is quoted in full below. Accompanying it is a small chart of the world showing the extent to which British Admiralty charts enter into the chart-outfits issued by the Hydrographic Office, and also a memorandum naming the more important places that cannot be reached by United States charts. Captain Bassett's letter follows in full except for the deletion of paragraph numbers:

"I desire to bring to your attention the dependence of the United States Navy and merchant marine on foreign sources for nautical charts. This condition has existed for many years, but since 1914 has become of greater consequence because United States vessels, naval and merchant, are now visiting foreign ports oftener, with consequent increase in the number of charts necessary. This condition is graphically shown on inclosure, and is also indicated by the following figures:

Charts on Issue January 1, 1922:

| | |
|---|---|
| U. S. Hydrographic Office charts | 2593 |
| U. S. Coast and Geodetic Survey charts | 642 |
| British Admiralty charts | 1109 |
| Total | 4344 |

### A 50 Per Cent Saving

"This dependence on foreign sources for charts constitutes a serious naval menace, because in an emergency, unless allied with Great Britain, the only country possessing charts of the world, the fleet would be unable to obtain these charts. This condition also results in an unnecessary expenditure of naval funds, on account of the necessity of purchasing from foreign sources charts which the government is unable to furnish its own vessels. Thus, in the current fiscal year the Navy Department has already expended $16,000, with a probable additional expenditure of $5000 during the remainder of the fiscal year, for British Admiralty charts. The cost accounting in the Hydrographic Office indicates that charts prepared by the Hydrographic Office can be furnished naval vessels for less than half of the cost of charts purchased from the British Admiralty. The cost of British Admiralty charts has been recently increased, which will make the expenditure for these charts greater in the future than it has been in the past.

"Privately-owned vessels in the United States and vessels of the United States Shipping Board are under the same necessity as the United States Navy of obtaining charts from foreign sources. This was a great detriment to United States vessels in 1914 and 1915, when United States shipping began to expand and could not obtain from United States sources necessary charts; for at that time Great Britain found it necessary, for various reasons connected with the war, to restrict the sale of its charts, which ordinarily are obtained by United States vessels. Even when the charts are available from foreign sources, the cost of charts prepared in foreign countries to the merchant marine is approximately double that of charts made by the Hydrographic Office, and there are numerous delays incident to obtaining an outfit of charts from abroad.

### A British Boast

"This dependence of the United States is well known abroad, and has been used as an advertisement by the agents for the British Admiralty charts and publications, as is shown by the following taken from a clipping from the London Daily Express of July 14, 1921, and circulated by J. D. Potter, agent for British Admiralty charts and publications:

**"Chartless U. S. Navy"**

> "The United States Navy hydrographic records show that there are 1200 points on the globe which can be reached only by the use of British Admiralty charts."

"Naturally this condition has been of considerable concern to the Hydrographic Office, and various hydrographers have described this condition to congressional committees and have recorded it in the annual reports of the Hydrographic Office. But it is particularly pertinent at the present moment on account of the determined effort being made by the United States government to foster a merchant marine, and the handicap this condition places on the merchant marine.

### Larger Force Needed

"This dangerous and humiliating condition can be easily remedied within a comparatively short time, due to the fact that charts once made can be easily and cheaply reproduced. The Hydrographic Office has developed methods since 1913 which have enabled it to reproduce over one thousand charts which before that time could only be obtained from foreign sources. However, each chart plate prepared requires constant correction on account of new information received, and at the present time the technical force of the office can only keep revised and corrected the present stock of charts. Further reproduction work cannot be undertaken without neglect of the present chart plates on hand. In other words, the office has reached the point of saturation as far as chart reproduction is concerned unless its force is increased.

"A careful survey of the facilities and personnel of the office has been made, and I believe that the reproduction facilities are entirely adequate to reproduce the remaining 1109 charts necessary to make the United States independent of foreign sources. I further estimate that, with an additional appropriation of $100,000 per annum for five years, the personnel necessary to reproduce those charts could be obtained. At the end of five years it is believed that all the chart plates necessary to reproduce charts of all surveyed regions of the world outside of the United States would be completed and available for reproduction purposes. After that time it is estimated that only $50,000 per annum would be necessary to revise and correct these chart plates for new information received.

### Dangerous in War Time

"To summarize:

"(a) The United States Navy and merchant marine are dependent on foreign sources, mainly British, for 1109 charts.

"(b) This dependence is a source of danger in time of war, and additional expense in time of peace, not only to the Navy but to the merchant marine.

"(c) This condition can be remedied within five years at an annual expenditure of $100,000, after which time an expenditure of $50,000 would enable the office to revise charts for new information received.

"(d) When the Hydrographic Office is prepared to make its own charts it will have approximately $20,000 a year for naval vessels and 50 per cent of the expenditure now being made by the United States merchant vessels for charts.

### $100,000 Is Requested

"I consider that this most important work should be no longer delayed, and therefore request that the following provision be added to the naval appropriation bill now pending in Congress:

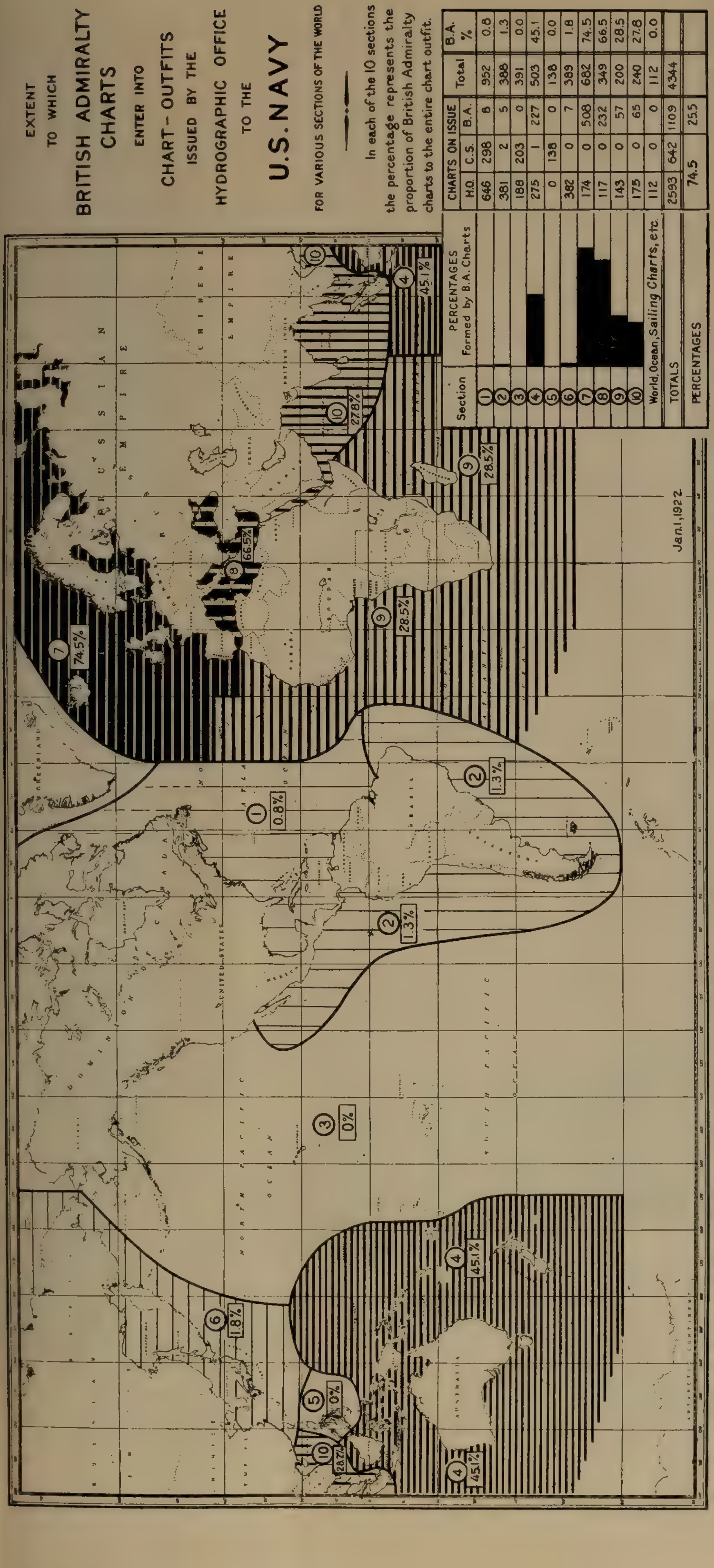


Chart showing extent to which the United States is dependent on the British Admiralty for charts. In 1920 38 per cent of the Shipping Board's vessels visited a region, that about the British Isles, where 75 per cent of the charts are obtainable only from foreign sources. The status shown is that of January 1, 1922

| Section | PERCENTAGES Formed by B.A. Charts | CHARTS ON ISSUE H.O. | C.S. | B.A. | Total | B.A. % |
|---|---|---|---|---|---|---|
| ① | | 646 | 298 | 8 | 952 | 0.8 |
| ② | | 381 | 2 | 5 | 388 | 1.3 |
| ③ | | 188 | 203 | 0 | 391 | 0.0 |
| ④ | | 275 | 1 | 227 | 503 | 45.1 |
| ⑤ | | 0 | 138 | 0 | 138 | 0.0 |
| ⑥ | | 382 | 0 | 7 | 389 | 1.8 |
| ⑦ | | 174 | 0 | 508 | 682 | 74.5 |
| ⑧ | | 117 | 0 | 232 | 349 | 66.5 |
| ⑨ | | 143 | 0 | 57 | 200 | 28.5 |
| ⑩ | | 175 | 0 | 65 | 240 | 27.8 |
| | World, Ocean, Sailing Charts, etc. | 112 | 0 | 0 | 112 | 0.0 |
| | TOTALS | 2593 | 642 | 1109 | 4344 | |
| | PERCENTAGES | 74.5 | | 25.5 | | |

"For the employment of draftsmen and such other technical employes as the secretary of the navy may deem necessary, to be employed only in the Hydrographic Office, for the construction, compilation and reproduction of such nautical charts as are required to render the Navy independent of all foreign sources of chart supply and for the production and maintenance of metallic printing plates of such charts, $100,000; provided, that no person shall be employed hereunder, other than as a draftsman or such other technical capacity, at a rate of compensation exceeding $1800 per annum."

### The Situation in Brief

The following is a brief statement of the most important places that cannot at present be reached by Hydrographic Office charts:

BALTIC SEA: Gulf of Bothnia, including Stockholm. Gulf of Finland, including Helsingfors, Kronstadt, Petrograd, Fredrikshamn, Revel. Baltic, eastern part: Windau, Riga, Libau, Konigsberg. Baltic, southern part: Danzig, Stettin, Swinemunde, Kiel. The only important places in the Baltic that can be safely visited on Hydrographic Office charts are Kristiana and Copenhagen.

GREAT BRITAIN (United Kingdom): ENGLAND: Four charts of the Thames, London, Lowestoft, Yarmouth, Hull, Middlesbrough, Shields, Bristol, Cardiff, Swansea, Milford Haven, Fishguard, Holy Head. SCOTLAND: Firth of Solway, Greenock, Glasgow, Caledonian Canal, Hebrides Islands, Spitzbergen Islands, Inverness, Dundee, Perth, Edinburgh, Berwick. IRELAND: Londonderry, Dublin, Wexford, Bantry Bay (Berehaven), Limerick.

FRANCE: Boulogne, Jersey Islands, Lorient, Corsica.

SPAIN: Malaga, Port Alicante, Cartagena, Santander, Bilbao, Coruna Bay.

PORTUGAL: Oporto, Lagos Bay, Port Huelva.

ITALY: Sardinia Island, entrance to Tiber River, several places in Sicily, Ancona, Durazzo Bay (Albania).

GREECE: Harbors in the Gulf of Corinth, Zante Bay, several harbors in Crete, practically all harbor charts in Grecian Archipelago, Gulf of Noeplea, Kalamaki, Piraeus (Athens), Island of Cyprus, several harbors.

BULGARIA: Karakatch Bay.

TURKEY-RUSSIA: Sea of Marmora; Black Sea, no charts whatever.

ASIA MINOR: Smyrna, Mitylene Island, all outlying islands.

TUNIS, MOROCCO and ALGIERS: Monastir, Tetuan Bay, Ceuta Bay, Tangier; the last three are opposite Gibraltar and are very important.

AFRICA (West Coast): Gambia river and approaches (important developments in progress; Orange river.

AFRICA (East Coast): Many harbor charts East Coast of Africa and Madagascar missing.

ARABIA: Persian Gulf; practically no charts of Persian Gulf and Tigris river. This includes the important city of Bagdad.

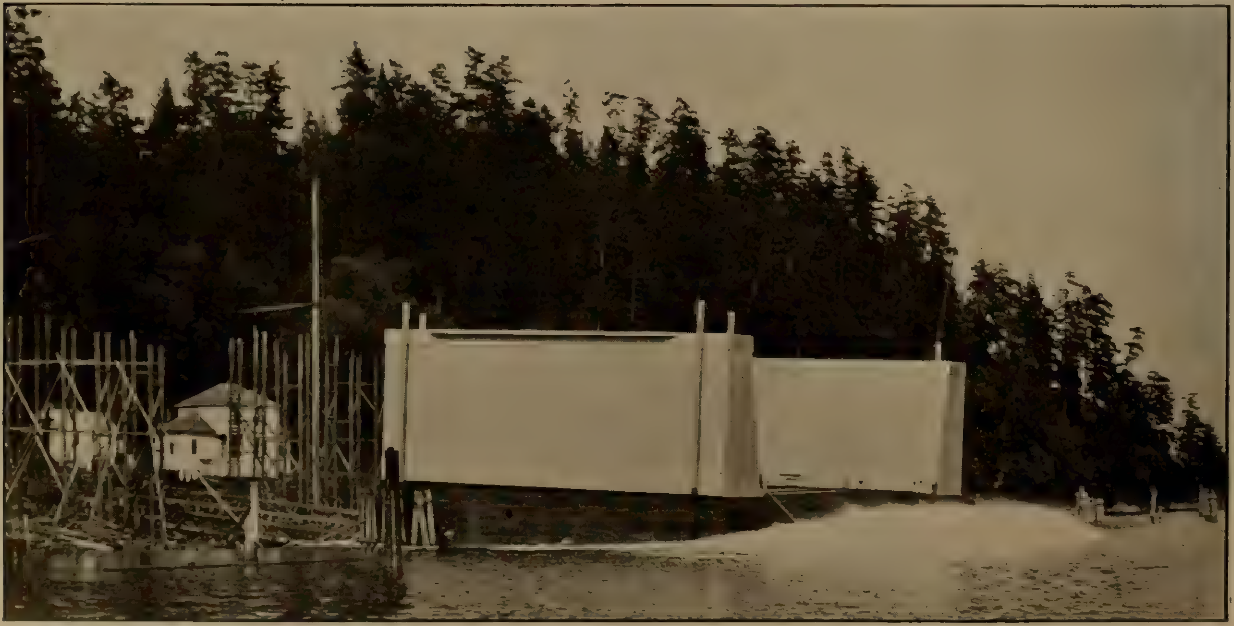
WEST COAST OF INDIA: No charts of Gulf of Cambay, Gulf of Kutch, twenty coast charts missing.

EAST COAST OF INDIA: Eight coast charts missing; several harbor charts, including Calcutta, missing.

BURMA: All coast charts missing; many harbor charts missing, including Mandalay, Bassein river, Rangoon, Irawaddy river.

MALAY STATES: Practically all coast charts missing.

AUSTRALIA and NEW ZEALAND: No coast charts for Australia or New Zealand. Practically no charts except harbor charts of Perth, Port Adelaide, Sydney, Auckland, Wellington.



Launching a drydock section built by J. C. Johnson, Port Blakeley, Washington, for the Todd Drydocks, Seattle. The section is 90 feet long, 127 feet 8 inches wide and 17 feet high to the deck and 50 feet to the towers. It was placed in operation the middle of May, giving the Todd yard a five-section dock 520 feet long and of 15,000 tons' lifting capacity.

# THE OCEANIC'S MAIL CONTRACT

## Government Manifests Intention to Permit Company to Continue Australasian Service. Two Vessels Planned

IT is now generally conceded that the Oceanic Steamship Company will continue to operate its steamships between San Francisco, Pago Pago and Sydney for at least a period of two years after the expiration of its government mail contract July 1. Acting under authority of the Jones Act, officials of the Postoffice Department and Shipping Board have submitted an emergency appropriation measure to Congress providing for approximately $384,000, the amount to be paid to the Oceanic Company at the rate of $32,000 for each of twelve voyages. Passage of the act is practically assured. The new contract between the government and the Oceanic will pay the latter $4 a mile for carrying the United States mails, instead of $2 as under the former contract. At the end of two years, various elements will be considered as a basis for a permanent contract.

### Old Contract Inadequate

The uninitiated might, on first impulse, believe 100 per cent increase in this mail contract to be excessive, but as a matter of fact, the increase is principally eloquent of the inadequate amount paid under the old subvention contract, which was based on the Ocean Mail Act of 1891. A former postmaster general in an official document boasted of the saving effected in the transmission of United States mails abroad through contracts with the Oceanic and another company; but those closely connected with marine activities could see in the enforcement of these contracts a very close resemblance to the tactics of a Shylock. The Oceanic for several years lost money under the old provisions; but during 1922, because of general depression in the Australasian trade and adverse tariff and exchange considerations, the drain has been enormous, and had the contract not, fortunately for the government, been dated to expire July 1, 1922, the company would sooner have been forced to suspend. The Oceanic originally entered into a contract to carry ordinary mail, consisting principally of letters, but with the coming of parcels post it was compelled to carry a vast number of bulky packages, which formerly produced revenue as express matter, with the result that its mail rooms soon became inadequate and parcels were carried as freight to the exclusion of other and more profitable shipments. Its vessels were compelled to carry cadets; they were operated under the rules of auxiliary naval steamers and were subject to seizure at any time; they were forced to remain in San Francisco harbor 15 days, in order that mail could be delivered from them to any part of the United States, twenty-four hours allowed for a reply; and sufficient time for the reply to reach San Francisco in time for their departure. They operated under strict schedules and were liable to heavy fines, and the owners to prison sentence for violation of the subvention contract specifications. The increased cost of operation, together with the foregoing regulations, created a burden that a majority of organizations would not have shouldered, no matter what the penalty, and the new contract provides no more than a just compensation for the imperative service to be performed. The word subsidy, with reference to government aid, has generally been used inadvisedly; but in connection with the Oceanic Steamship Company it has been employed misleadingly and incorrectly. The Oceanic service to the government is of a definite, regular character; this service is highly essential and exacting; the government cannot perform the service as efficiently or as economically as can the Oceanic and a contract covering the service and the compensation to be paid therefor is to be agreed to. The word "compensation" is fully descriptive of what the Oceanic receives for its services. It is a bold honest word and is not susceptible to double interpretation in the mouth of a propagandist. It ought to be more generally used by friends of the American merchant marine.

### Will Not Share in Subsidy

All the regulations of the old contract will be incorporated in the new. The amount of compensation will, however, be sufficient for the unusual service. It is not expected that the service will be inexpensive; its cost, in fact, will be proportionate to that of the rural free delivery postal service maintained in many of our remote country districts. This service does not pay, will never pay, and is never expected to pay; but in the interests of our commercial and social necessities it will be continued, and for the same considerations the mail service to our remote Pacific stations should be maintained, and the steamship operator paid adequately for his services. For the duration of the mail contract the Oceanic vessels, Ventura and Sonoma, will not participate in any of the provisions of the Subsidy Act and $32,000 a voyage will constitute their sole compensation from the government.

Frederick S. Samuels, general manager of the Oceanic Steamship Company, who recently visited Washington in behalf of the contract sought by his company, announces that with the new contract effected and with other elements favorable his organization expects to call for bids for two new vessels for the San Francisco-Sydney service. He emphasizes, however, the impracticability of such an investment based alone on the two-year mail contract. If the subsidy act were not passed, or if undesirable conditions were included therein, the company would not be inclined to invest in two additional vessels designed and specially fitted for a service that might be discontinued by the government after the two years had elapsed. The proposed tariff act is also an obstacle in the building program of this firm. Under the new act, the shipment of meat and similar products from Australasia would practically cease, as has been demonstrated by the demoralizing effects of the present tariff law on these commodities. The Australian tariff presents another difficulty, giving as it does a decided preferential to British possessions. No one is in a position to estimate the cumulative potential injury that will result to American shipping through these unusual tariff measures, and, while the Oceanic does not anticipate disastrous effects from them, a combination of no subsidy or unfavorable subsidy and trade-reducing tariffs would dissuade the boldest ship operator from adding to his worries.

### Diesel Drive Considered

The Oceanic has not decided definitely on the character of propulsion that will be used in the proposed vessels. The tentative plans show three screws and these will be used if the propulsion decided on is a direct-diesel drive. If a turbo-electric or a diesel-electric drive is decided on, the propulsion will be twin-screw. The vessels are designed for a maximum speed of 17 knots. A speed of 18 knots would be preferable under the terms of the subsidy act and, if the company can obtain diesel engines that will attain that speed and give promise of reliability without excessive weight or size, that will have an added influence in speeding up construction. All forms of engines are being carefully considered and the economies claimed for diesel engines were originally instrumental in causing the company to consider a building program. The situation invites the ingenuity and mechanical skill of diesel engine manufacturers and something new may come of it. The utility of ordinary fuel oil in diesel engines is also being studied. It is admitted that such oil is being used, but there is also a considerable quantity of the more expensive diesel oil burned, and with this and other facts in mind Oceanic officials have not been entirely converted to the diesel idea; but as the tentative plans provide for a direct-diesel drive it may be concluded that this mode of propulsion has made the most favorable impression on those officials who will authorize construction.

Particulars of the proposed vessels are: gross tonnage, 9414; speed, 17 knots; draft designed, 25 feet; depth to shelter deck, 40 feet; breadth molded, 60 feet; length between perpendiculars, 475 feet; length overall, 494 feet. Accommodations are provided for 203 first-class passengers; 46 second-class, and for a crew of 143, giving a total accommodation for 492 persons. Plans specify bridge, boat, promenade, shelter, main, lower, and orlop decks. Officers' quarters are located on the bridge deck, crew space forward under shelter and main decks; first-class passenger accommodations amidships on the main, shelter, promenade and boat decks; second-class accommodations aft on the same decks. Storage facilities for mail are forward under the shelter deck, as is a special storage room for films. The vessels are to have a bulk storage capacity for grain of 237,000 cubic feet; the fuel tank capacity is 1980 tons, while additional cold storage facilities are provided aft on the lower deck. The radio room is situated amidships on the bridge deck. The vessels are to be equipped with flying bridge.

# PROSPECTS OF AMERICAN SHIPBUILDING

## "Fair, But Not Alluring" Is the Conclusion of the Vice-President of the Merchant Shipbuilding Corporation

By J. L. ACKERSON*

IN order to analyze the prospects for American shipbuilding, it is necessary briefly to analyze in turn, first, world shipping; second, world shipbuilding; third, American shipping; and fourth, American shipbuilding. It is possible to have a revival in world shipping and in world shipbuilding without any great increase either in American shipping or American shipbuilding. World shipping depends upon international trade, which in turn is dependent upon the desire to exchange international products, the ability to finance this exchange of products, and the time necessary to insure the accomplishment of these two items. The desire to exchange products, of course, exists. The necessity for this interchange of products also exists, not only on account of normal trade conditions, but also due to the fact that foreign countries are of necessity under the obligation of exporting goods in order to pay their respective debts. Although the desire to exchange products exists, the ability to finance this exchange does not, at least for many of the European countries, exist. It is necessary that large credits be established in these countries to start their industries in the manufacture of exports.

### Two Countries Can Finance Trade

Probably the only two countries that are in a position to finance this interchange of products are the United States and Great Britain. At the present moment, the financial interests of Great Britain appear willing to loan money for this purpose. In the United States, at the present moment, there does not appear to be that same willingness. Just how long it will be before this will be brought about is uncertain; but probably the time necessary to crystallize public opinion, to effect the necessary loans, and following that to establish manufacturing on a post-war normal basis in the European countries, will be not less than three to five years.

Following this line of reasoning, it would appear to me that the world shipping will not return to what may be termed its "post-war normal proportions" until this period of time, varying from three to five years, shall have elapsed.

### The Future of World Shipbuilding

From the time this revival begins, an increased demand for ships will manifest itself. Whether new ships will be built or not as a result of this demand will depend upon two things: first, the tonnage necessary to carry out the increasing international trade; second, the tonnage actually existing at the time. In viewing this, it should be remembered that on the whole there is no greater tonnage of vessels available today than would be available today had the World War not taken place. Also, many of the ships now included in the world tonnage are old and obsolete. There have been few replacements of the better types of ships. The war tonnage, as a whole, cannot be regarded as a suitable and adequate increment of the merchant marine. During the past eight years comparatively few passenger vessels or combined cargo and passenger vessels, or even high-grade cargo liners, have been added to the world tonnage.

The international trade revival that will unquestionably take place in the next three to five years will create a demand for vessels suitable for special trades, and also for passenger and combination passenger and cargo vessels. These vessels when built will undoubtedly be built in accordance with the advances in engineering that have taken place in the past few years. Notable among these advances is the diesel engine. It would appear that when the demand for additional tonnage does manifest itself, the new tonnage required will at least be equal to the annual pre-war construction, possibly even greater.

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* Address delivered by J. L. Ackerson, vice-president of the Merchant Shipbuilding Corporation, before the National Foreign Trade Council Convention.

Although it can be shown with reasonable clearness that there will be a demand for additional world tonnage, it does not necessarily follow that there will be a demand for American tonnage. American shipbuilding, of course, depends upon American shipping. An increase in American flag shipping depends upon, first, an increase in foreign trade shipping; second, upon the ability of American flag vessels to compete in this trade; and third, upon an increase in coastwise trade shipping. Relatively speaking, there have been, and probably will be, very few ships built in the United States for operation under foreign flags.

### American Shipbuilding Prospects

Although an increase in international shipping is certain, the question remains whether American operators can operate American flag vessels in competition in these trades with foreign flag vessels. Several of the larger operating companies are now seriously making this experiment. Most of the ships that are being operated in carrying out this experiment are of special types. For example, the United American Lines, one of the Harriman organizations, is operating the Resolute and the Reliance in the first-class passenger service between the United States, United Kingdom and the Continent. That line is also operating second and third-class combination passenger and cargo vessels, the Mount Carroll, the Mount Clinton and the Mount Clay, between the United States and the Continent. The American-Hawaiian Steamship Company is operating large fast freight liners, the diesel-engine ships Californian and Missourian, between Pacific ports, Atlantic ports and European ports. The United States Lines is operating first-class passenger vessels between the United States and the United Kingdom.

It is yet too early to predict the results that can be obtained over any sustained period of time in these operations. The success will probably depend, to a great extent, upon pending legislation. With favorable legislation it is probable that the results will be satisfactory, in which case there will undoubtedly be a decided demand for: A, passenger vessels; B, combination liners; C, special cargo liners; all for operation in foreign trade under the American flag. These vessels of necessity will be built in the United States.

### United States Coastwise Trade

The coastwise trade has heretofore furnished the greater part of the merchant work that has been performed in American yards. This trade is increasing. Much of the trade that heretofore has been carried by rail is now being carried by water. A great part of this carriage is done by special types of ships, as, for example, the Luckenbach ships, American-Hawaiian ships, Red D ships, and Agwi ships. Many of the ships in these and other lines active in the domestic trade are old and obsolete. Undoubtedly there will be replacements in the respective types in the next few years. Many replacements are actually now in contemplation. Competition in these trades will bring about a demand for more economical operation. This will be accomplished probably by obtaining new and special types; and by the conversion of existing ships. Already there is much activity on the part of ship operators looking toward the building of new ships and the conversion of some of the more suitable of the Shipping Board ships.

### Diesel Ships Must Be Considered

Diesel ships deserve special consideration. Although there is no question regarding the exceptional economy to be obtained in the operation of these ships, American operators have been slow to adopt them. The economy of operation is so startling that, in my opinion, the change from the present accepted type of machinery to diesel machinery will make a change in shipping in the next decade which will be not unlike the change from sail to steam. This change in the ships in future to be built will, in my opinion, extend not only to cargo vessels, but progressively will extend to passenger ships, first with the low-powered twin-screw passenger ships, and quite probably later to the larger powered ships. The results, with which all are familiar, of the William Penn, which showed a saving of approximately $53,000 in one trip around the world, will inspire a number of operators to demand the same economy.

### "Fair, But Not Alluring"

There will be comparatively few navy ships built in the next few years. Navy building will be confined to airplane carriers, cruisers, scouts and submarines.

Summing up, it seems to me that the following conclusions are clear:

First—It will take from three to five years to stabilize international finances and to insure the establishment abroad of credits necessary to enable foreign industries to place themselves in a position to export large volumes of goods.

Second—During this period international trade will greatly increase until at the end of, say, five years, it will attain what may then be termed its "normal."

Third—That during this period there will be an increased demand for ships. That this demand will cause to be culled from the present stock of unemployed ships those that are most suitable, and will then cause the building of new ships of the most suitable type, representing the advances in shipbuilding during the past several years.

Fourth—That this increase in international trade will bring about the desire on the part of American operators to engage in this trade.

Fifth—That this desire on the part of American operators will, if suitable shipping legislation is enacted, cause them to place contracts in American yards for new and special types of ships for operation under the American flag. That this demand for shipbuilding will be augmented by the demand on the part of American operators for special ships to be used in the coastwise and domestic trade. A part of this demand will be met by the conversion of existing American tonnage where practicable, but a part of it, however, will of necessity be provided by new ships, to be placed in American yards. An increasingly greater proportion of these ships will be equipped with diesel engines of an approved type.

Sixth—A small demand will exist for naval auxiliaries.

This, then, is how I view the prospects of American shipbuilding: fair, but not alluring.

# ANOTHER DEFEAT FOR THE RAILROADS

## Attorney-Examiner Disque Recommends to the I. C. C. Denial of Application for Relief from Fourth Section

ATTORNEY-EXAMINER WILLIAM A. DISQUE of the Interstate Commerce Commission has dealt the transcontinental railroads of the United States a severe blow by recommending that the commission deny applications for relief from the Fourth Section, Transportation Act. Led by the Southern Pacific, the transcontinental railroads sought to publish lower rates to Pacific Coast terminals than to intermountain territory, the object being a more effective meeting of intercoastal steamship competition; but in order to reduce their terminal rates while they maintained intermountain tariffs unchanged, the rail lines had to win consent of the Interstate Commerce Commission. That consent has neither been given nor denied, inasmuch as the transcontinental cases were argued before the whole commission June 1, 2 and 3, and a decision is not anticipated before July; yet it is quite evident that the railroads have been placed under a great handicap by the report of Mr. Disque, and the intermountain country and the steamship lines, whose interests are much the same, have won a skirmish of no little importance.

### Some Applications Approved

Mr. Disque's report is a bulky manuscript of more than 100 typewritten pages. It goes exhaustively into the entire question of railroad-steamship competition, the effect of granting relief from the Fourth Section, the position of the intermountain country, the "reasonably compensatory" aspect of the proposed rates; and, after these phases have been considered at length, it recommends denial of the application on broad grounds of public policy. As part of the same report, but of secondary interest here, Mr. Disque recommends: denial of a Fourth Section application on sisal and ixtle, granting of one on sulphur and of one on coffee, all moving to the Pacific Coast; granting of one on eastbound commodities moving from California terminals; denial of one on wool moving from Pacific terminals.

In considering the applications covering westbound commodities, Mr. Disque devotes much space to a discussion of "the out-of-pocket basis" of rate-making. This basis, which probably is not understood by steamship operators so well as it is by railroad traffic managers, assumes that any rate that brings in more than the actual cost of obtaining and handling business is "reasonably compensatory" under the Fourth Section and therefore is legal. Although attacks have been made by intermountain representatives against the principle it has been recognized by the Interstate Commerce Commission and is defended by Mr. Disque. He sums up his discussion of the proposed rates by saying: "However, the rates to the Pacific Coast terminals that have been permitted in the past were believed by this commission to pay something over and above the out-of-pocket costs, and if they paid some profit the rates here proposed should do likewise, for they fully reflect the greater costs of doing business now than formerly."

### Questions of Policy

The legality of the "out-of-pocket basis" and the intrinsic merits of the proposed rates having been established, the one ground for denying the application is found in considerations of policy. Mr. Disque therefore examines the positions of the Pacific Coast and the intermountain country, the effect on railroad revenues and on steamship lines. The Pacific Coast, at the Disque hearings, reiterated the old argument that there are heavy movements of cars westbound and that the granting of lower rail rates would help fill them; this argument is dismissed briefly in the report as being true enough. As for the intermountain attitude, spokesmen contended that reductions on freight destined to terminals should entail lower rates for Spokane, Reno, Salt Lake City and Phoenix; Mr. Disque sustains this contention in the following summary: "If reductions are made in the rates to the Pacific Coast it would seem only fair to require reductions to intermountain territory to compensate that territory for the injury that would be done it by the new advantages afforded the Pacific Coast." One basis of conclusion, apart from the fact that the terminal cities would receive lower rates, immediately, is found in the probability that "if the application were granted and the proposed rates established, the water lines might reduce their rates wherever possible to the extent necessary to offset the effect of the new rail rates. . . . It seems impossible adequately to cope with this situation so long as the water carriers are free to reduce their rates to retain the business that the rail lines here seek to take from them. However, eventually it might be possible for the rail lines and the water lines to consummate some agreement and both sets of rates be allowed to crystallize into a stable basis." This highly desirable state is likely to be attained by co-operation and a use of the economical steamship for the long haul rather than by unrestricted competition, it may be observed; but so long as Pacific Coast terminals seek to stir up rate wars between railroad and steamer peace is somewhat remote.

### Railroads Would Lose Revenue

In considering the effect on the railroads, Mr. Disque asserts that "such profit as would accrue from the proposed rates would be very largely offset by what would be lost thereby on the traffic that would move by rail even without the reduction. Although a large volume of the traffic in the commodities in question is moving by water the movement by rail is still very heavy. . . . The rail lines by hauling this business overland would deprive themselves of revenue they are now receiving for the haul from points of production to the ports. . . . Take for instance iron and steel from the Pittsburgh district, by far the most important traffic involved. They are handling perhaps most of this business now to Baltimore, earning on the principal articles 35 cents per 100 pounds for a haul approximately 340 miles under what are ordinarily considered favorable conditions. They are proposing to take this same business westbound at a rate of $1, hauling it about 2500 miles, or about seven or eight times as far, over the desert regions and mountains of the West, under the most difficult transportation conditions of the country. . . . If the eastern and western lines be treated separately, it is noted that the former propose to haul the traffic about 468 miles from Pittsburgh to Chicago for a division of 15 per cent of the through rate or a proportion of 15 cents, instead of from Pittsburgh to Baltimore, about 311 miles, at the local rate of 35 cents." Then why should the eastern lines acquiesce in the western railroads' application, especially since the lines east of Chicago are dissatisfied with their divisions on transcontinental business and they and the southern lines reserve the right to decline to join in the rates if satisfactory divisions are not made? Mr. Disque finds that the lines east of Pittsburgh concur because of their practice of leaving the adjustment of transcontinental rates to the lines west of Chicago, this policy apparently being based on "considerations of comity, intercorporate relationship and general community of carrier interests, as well as a willingness to afford the shipping public a choice of routes." Yet since Mr. Disque held his hearings signs have appeared that eastern and southern railroads are turning away from the western and are frankly welcoming alliances with steamship lines.

### "Serious for Water Lines"

In discussing the probable effect on intercoastal shipping Mr. Disque employs language of considerable gravity. "A granting of the application would be serious for the water lines. . . . The loss of much business . . . would tend to make their operation unprofitable, drive some of them out of the business and deprive the Pacific Coast of a cheap means of transportation." That latter sentence should be printed in letters of vermilion and hung in the offices of a few chambers of commerce of the Pacific Coast; perhaps if that were done those organizations might not be so intent on killing the goose that lays the golden eggs. Mr. Disque continues: "If the out-of-pocket basis is proper for the rail lines, the water lines may be justified in using it, but since their business is more limited they do not have as much traffic to carry the balance of the burden. That basis may become destructive when carried to its natural conclusion as a means of retaliation and reprisal." It appears, therefore, that the one hope of the railroads' driving steamships from the intercoastal trade lies in employing the "out-of-pocket basis", which shipping from its very nature cannot use but which can be employed by rail lines that have the interior practically at their mercy. If this view be well founded, then the transcontinental cases assume a great importance indeed.

After discussing the situation of the American merchant marine and the government's expressed policy of aiding it, Mr. Disque urges that, as water and rail rates fall in competition with each other, "they should be co-ordinated by competent regulating authority, lest certain localities and carriers become from time to time the victims of unwholesome disadvantages."

### Much Water-borne Traffic

Prior to arriving at his conclusion that the applications should be denied, Mr. Disque recapitulates information obtained at the hearings and elsewhere. "The rail lines and water lines, respectively, upon request furnished statements of the tonnage moved from the defined territories to the Pacific Coast during June, July and August, 1921," said he. "These statements showed that more than half the traffic in most all of the commodities involved was shipped by water. . . . All but a small portion of the water-borne traffic originated in and east of Buffalo-Pittsburgh territory, suggesting that the Pacific Coast interests are making their purchases in that part of the East which is tributary to the water lines and from which they can secure low rates. . . ." Traffic "generally moves via the North Atlantic ports. The small portion which moves from points west of the Pittsburgh - Buffalo district goes either to the North Atlantic ports or to the Gulf ports for transshipment. The traffic via the Gulf is rather light. The Gulf lines must depend mainly on iron and steel from the Birmingham district and on commodities produced near the Gulf."

Throughout his recapitulation of testimony, Mr. Disque refers to rate-cutting by steamships. "There is considerable evidence to the effect that, particularly on iron and steel, which is desirable traffic, the conference rates have been departed from in a very substantial way. . . . Apparently the stronger lines with first-class service are more likely to adhere to the conference rates than the weaker lines with less frequent sailings and slower schedules." Few persons who are familiar with intercoastal shipping would deny that Mr. Disque has put his finger on a sore spot.

This rate-cutting, or what is tantamount to the same thing, a belief on the part of the railroads that there had been secret quotations, led the railroads in some cases to propose too low tariffs. But "none of the proposed rates meet or even approximate the coast-to-coast rates of the water lines and they are not generally intended or expected to draw or to hold any large amount of the port-to-port traffic to the rail lines. They do, however, approximate the charges available from certain interior points to the Pacific Coast terminals by rail to the ports and thence by water, plus such incidental charges as marine insurance and unloading and transfer charges at Pacific Coast terminals," and therefore would tend to open Pacific markets to Middle Western manufacturers, many of whom practically have abandoned any effort to compete with their seaboard rivals.

### Advantages of the Railroads

Mr. Disque's analysis of rail and water service is worth careful study by shipping operators: "It is of course not necessary to have the same rate by water as by rail to afford the two sets of carriers equality of opportunity as to any given point of shipment. The slower service, the necessity for making arrangements for transshipment of the ports, the irregularity of ship movements, special requirements as to marking, and other considerations operate to the detriment of the water lines. Due to the transfers at the ports, difficulties incident to stowage of mixed cargoes, the rolling of the ships, the atmospheric conditions, and the changes in temperature while en route, the shipment of goods by water often damages them more than shipment by rail in carloads. Many of the same disadvantages are experienced in shipping by water in carloads, as when the goods are shipped in less-than carloads by rail. . . . On perhaps most of the commodities involved, shippers as a rule prefer rail to water movement, unless there is a differential of from 10 to 25 cents per 100 pounds, dependent upon the commodity, in favor of the latter."

Some of the disadvantages of water lines are inherent, a few probably are insuperable; some have to do with physical operation of vessels, others flow from steamship policy. What Mr. Disque has to say (and his opinion is well grounded upon hundreds or thousands of statements he has heard) should go far toward persuading shipowners engaged in intercoastal trade that in all things they should approach as closely as is humanly possible to the service of the railroads. They might quote through rates in conjunction with eastern rail lines, they might include marine insurance, wharfage and so on in their tariffs, to the end that the shipper would be called upon to pay no extra charge that the railroads did not demand of him. Should the railroads be permitted by the Interstate Commerce Commission to reduce their rates, shipowners would be compelled to fight hard for their lives and they could afford to ignore no factor, however slight.

# HAWAIIAN TOURIST TRAVEL

## Congestion that has Existed Since the Close of the War Appears to be About at an End

By WILL J. COOPER*

WHEN the two Shipping Board vessels City of Los Angeles and City of Honolulu are put in operation before long by the Los Angeles Steamship Company between Los Angeles and Honolulu, the passenger facilities with Hawaii will have been practically doubled. If the steamship H. F. Alexander, formerly the Great Northern, which has recently been purchased by the Pacific Steamship Company for the Pacific Coast service, is placed on the Seattle-Hawaii run during the winter months, as is reported to be contemplated, the passenger accommodations between the mainland and the islands will be increased about three times what they are at present. This indicates something of the interest that the Hawaiian Islands are beginning to have in shipping circles; and that the almost constant congestion of travel to and from the territory ever since the war has at last attracted attention.

### Other Vessels Added

But besides this the congestion referred to is likely to be still further relieved through increased facilities of the Pacific Mail Steamship Company and by the new routing of two fast ships of the Canadian Pacific Railroad's famous Empress fleet to make Honolulu a port of call on their outbound voyage to the Orient from Vancouver, as recently announced. The Pacific Mail's new Manila-Hongkong service, combined with two new Shipping Board vessels soon to be added to its Japan-China-Manila service, is expected to claim some part of the Hawaii business, at least during a portion of the year. For several years past this company has been so well booked up with Oriental business that it has been unable to handle much Hawaii traffic. The Canadian Pacific's announcement provides for routing the two fastest liners of its Pacific fleet, the Empress of Australia and the Empress of Canada, via the "Sunshine Route" on a monthly schedule during the winter season. It is understood that the demands of its clientele for a better weather trip than that afforded by the northern great circle route from Vancouver is responsible for this new service. The first sailing is announced for November, and while Honolulu is simply a port of call it is likely that the islands will profit to some extent by the additional facilities afforded.

At the present time the Matson Navigation Company enjoys a virtual monopoly of the Hawaiian business. It maintains a weekly service each way and has done much to make the islands popular through the high character of service it renders. But it has been unable to keep pace with the development of the tourist travel demand. The ships of the Oceanic Steamship Company's monthly Australasian service and of the Pacific Mail's Oriental service make Honolulu a port of call, but ordinarily have sufficient through business to make it impossible to handle the short-haul Hawaiian traffic.

### Two Lines Barred

The Toyo Kisen Kaisha and the China Mail Steamship Company, which also touch at Honolulu, are barred from handling island business. The Canadian-Australasian Royal Mail Line, while also foreign, is able to do some business with Hawaii because it operates out of Vancouver, a foreign port, and not between two American ports. What business it does with Hawaii is, however, more or less seasonal and dependent upon through traffic.

Those who are in touch with the situation believe that all of the announced increase in shipping to Hawaii is justified, at least insofar as the passenger traffic is concerned. As to the freight business, that is a different matter and opinions differ. But Hawaii as a tourist resort, as an all year around playground for the world, is rapidly coming into its own. It is a part of the destiny of the islands. This is one of the few places in the world that finds an enthusiastic booster in practically every visitor, with the result that in recent years the transportation facilities have constantly lagged behind the demand.

### Advertising of the Islands

Much of the credit for the present widespread interest in Hawaii is no doubt due to the consistently maintained advertising which the islands have been doing for the past twenty years or more. This may be said to have started about the time of annexation,

There weren't many visitors to the islands a hundred years ago in 1900. Three years after this the people of Honolulu organized a small bureau, which was called the Hawaii Promotion Committee and was an adjunct of the Honolulu Chamber of Commerce. This committee has remained in existence ever since, although its name was changed a few years ago to the Hawaii Tourist Bureau. Its income has been small and until about four years ago derived entirely from voluntary subscriptions of the business men of the territory. It is now supported in part by the appropriations from the legislature and has an income of something less than $50,000 a year.

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* Mainland agent, Hawaii Tourist Bureau.

But its work, though necessarily limited, has been steady and has been cumulative. It has attracted the attention of many men and women of prominence in the world of art and letters, who have been enraptured by the beauties of this well-named "paradise of the Pacific," and have willingly helped to spread its fame. Its strategic position as the "Crossroads of the Pacific" has naturally brought it to the attention of military men and shipping interests with the result that within the past fifteen years it has been made into one of the strongest military and naval bases in the United States, as well as one of the most important seaports in the Pacific.

But such vessels as the Matson flagship Maui, here shown entering Honolulu harbor on her maiden voyage, have built up a remarkable business

### A Matchless Climate

Situated as it is, just within the tropics, but tempered by the constant northeast trade winds and ocean currents; and being outside of the area of either hurricanes or calms, Hawaii has a climate that is probably unmatched by any other place in the world. This climatic perfection, combined with almost incomparable beauty of its scenecy—towering cloud-capped mountains, sparkling waterfalls and flashing surf line, with color in unbelievable variety and vividness in land and sea and sky—accounts for the fact that the islands have enjoyed such unrivaled reputation of near-perfection ever since the time of Captain Cook. Popular as the winter rendezvous of the New England whaling fleets of a century ago, they have always been held in high regard by seamen, but for nearly a century have remained merely a name to the rest of the world on account of the inadequacies of transportation.

But now that swift steamships have replaced the uncertainties of the sailing vessels of yesterday, now that submarine cable and the radio have annihilated time and space, these islands are being discovered anew, this time by all classes and nationalities of the world who have the time and means to travel. And so anxious is the world to experience the delights of the "loveliest fleet of islands that lies anchored in any ocean", as Mark Twain called them, that for the past three years travel agents have been driven to despair in endeavoring to find steamship accommodations that did not exist.

### Railroads Welcome Steamships

The trans-continental railroads are warmly welcoming the news of additional passenger service to Hawaii, since the islands are already proving a decided stimulation to travel. There is every indication that Hawaii will be as consistently advertised by these great carriers as soon as there are sufficient shipping facilities to warrant it, as now are California, Florida, the national parks and other tourist resorts.

In connection with the national parks, the creating of the Hawaii National Park, a few years ago, is drawing added attention to the wonders of our insular territory. The Hawaii National Park includes the ever-active volcano of Kilauea and the intermittent crater of Mauna Loa on the Island of Hawaii and the mammoth extinct crater of Haleakala, 10,000 feet above the sea level, on the Island of Maui. The national park service is preparing to build an elaborate system of railroads, as has been done in the mainland parks, to make these wonders easily accessible; and it is also beginning to give the new park the benefit of the same wide advertising which the other parks receive.

For these various reasons above outlined the people of Hawaii feel that the seed they have been patiently sowing is about to bear abundant fruit, and that the time is fully ripe for the improved service which the various shipping interests now seem ready to provide.

# RADIO DIRECTION FINDING

## Methods of Radio Direction Finding as an Aid to Navigation: Relative Advantages of Locating Finder on Shore and on Shipboard

By F. W. DUNMORE*

NOW that the great value of the radio direction finder as an aid to navigation is being generally recognized, considerable importance attaches to the question whether its proper location is on shipboard, in the hands of the navigator, or on shore.

The essential part of a radio direction finding equipment or "radio compass" consists of a coil of wire usually wound on a frame from four to five feet square, so mounted as to be rotatable about a vertical axis. Suitable radio receiving apparatus is connected to this coil for the reception of the radio beacon signals. The construction and operation of the direction finder have been discussed in detail in Bureau of Standards Scientific Paper No. 428, by F. A. Kolster and F. W. Dunmore, to which the reader may refer for further information. (A copy may be purchased for 15 cents from the superintendent of documents, Government Printing Office, Washington, D. C.)† The present paper is concerned primarily with a comparison of the relative advantages of the location of the direction finder on shore and on shipboard.

**In this article Mr. Dunmore marshals a convincing array of arguments for the installation of radio direction finders on board ship. The subject is one that is engaging more and more the attention of shipowners and might be studied profitably by underwriters, who after all have most to gain. Mr. Dunmore cites the Alaska wreck as evidencing the need of finders on shipboard, as the Neptune Association did in urging the Steamboat-Inspection Service to require the installation of submarine bell equipment. Almost everything that might be urged in favor of the installation of submarine bell receiving apparatus might be said in behalf of the radio direction finder on board ship; in fact, aside from the relative paucity of transmitting stations, direction finding apparatus appears to have every advantage over the other system, and this despite the fact that the Steamboat-Inspection Service held that proponents of the submarine bell apparatus had not made a sufficient showing to justify the recommending of legislation.**

### Two Methods Described

The two methods may be briefly described as follows:

1. Direction finder on shore.—This method usually consists in the use of two or more radio direction finder station installations on shore, each of these compass stations being connected by wire to a controlling transmitting station. A ship's navigator wishing to know his position orders the radio operator to call the control station by radio and make a request for bearings, the signals "Q. T. E." being used for such a request. If the direction finder stations are not busy taking bearings on some other ship, the radio operator on the ship in question is requested to transmit the signal letters "M. O." for a period of one minute, during which time each of the compass stations takes radio bearings. These bearings, if satisfactory, are then transmitted by wire to the control station where they are plotted and checked and retransmitted by radio from the control station to the ship and turned over to the navigator by the radio operator. Should one of the three radio compass stations on shore fail for any reason to obtain a satisfactory bearing the ship is requested to repeat the "M. O." signal until a bearing is obtained. Single stations on shore are also used to furnish bearings only.

At the time that the development of this system was started, it was the only immediately feasible methed of direction finding, since very few ships were equipped with direction finders, and in a time of military exigency it was not possible to install such equipment on all ships. Also the method of direction finding on shipboard had not been developed to its present state of efficiency.

### Further Installations Planned

2. Direction finder on shipboard.—This method, which makes use of the direction finder on shipboard and transmitting radio beacon stations on shore, for instance, at lighthouses, or moored light-vessels, has been developed by the United States bureau of standards in co-operation with United States lighthouse service. The bureau of standards, in developing this system of direction finding, has so simplified the apparatus that the direction finder is put directly in the hands of the navigating officer on shipboard. At lighthouses or other suitable places on shore, radio transmitting equipment is installed which operates automatically when once in motion. These transmitting stations are placed in operation during fog, and at stated times given in a published schedule. At present four such beacons are in operation, one on Fire Island light-vessel, another on Ambrose Channel light-vessel, a third at Sea Girt lighthouse, Sea Girt, New Jersey, and a fourth on San Francisco light-vessel. When funds are available, further installations are planned for the important light-vessels and lighthouses on the Atlantic and Pacific coasts. These radio beacons operate automatically on a wave length of 1000 meters, each beacon sending a different distinctive characteristic signal at given intervals, the intervals being different for each neighboring beacon. The signals are of a group-dot nature and are as easily recognized by the untrained ear as the characteristic light flashes at a lighthouse are differentiated by eye. Neighboring beacons are operated on slightly different wave lengths in order to reduce the interference between beacons. The ship's navigator desiring to determine his position, or the line of direction to a light-vessel, or lighthouse radio beacon, turns to the radio direction finder (which is usually installed in the pilot house), closes a switch and adjusts a single tuning condenser until the desired beacon signal characteristic is heard. The radio compass coil is then rotated to the point of signal extinction, the radio bearing being then read directly with respect to magnetic north on the card of a magnetic compass, which forms part of the direction finder equipment.

Disadvantages and advantages of the method of locating the radio direction finder on shore for determining the position of a ship at sea are as follows:

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* Associate physicist, Bureau of Standards, Department of Commerce.

† Abstract published in Pacific Marine Review, May, 1922.

A. Disadvantages of direction finder on shore:

1. The service rendered by direction finders located on shore is very limited, for at a given harbor entrance only one ship at a time may obtain bearings, it being necessary for the others to wait in turn. It will readily be seen that this is a handicap, for in time of fog when the radio compass is most useful, many ships need bearings and need them frequently. This congestion involves loss of time, which, especially in the case of large passenger ships, means considerable expense to the shipping companies.

2. A ship's navigator is inclined to put less confidence in bearings obtained by another observer on shore than in those which he may take himself. The responsibility of the navigation of a ship is very great and should be left entirely in the hands of the navigating officer, who should take his own observations and bearings. Just as the responsibility of reading the sextant, pelorus and magnetic compass are in his hands, in a like manner it is logical that the operation of the radio compass should be so handled.

3. Considerable expense is involved in erecting and maintaining radio compass stations on shore. The cost and difficulty of maintaining special trained personnel to operate these stations is also a factor worth noting. Radio compass stations on shore cannot conveniently make use of existing personnel and buildings, as is the case when the transmitting station is on shore and the direction finder on shipboard; hence the cost of maintaining such stations is considerably greater. It is also difficult to keep personnel in many of the isolated places where direction finder stations are usually installed.

### Possibility of Error

4. The possibility for personal error is greatly increased: To obtain a single bearing (not a "fix") the information must pass through five stages, as follows: (a) the radio bearing must be read from the radio compass scale; (b) it must be correctly transmitted by wire to the control station; (c) it must be correctly received by the operator at the control station; (d) it must also be accurately sent by radio to the ship; (e) finally it must be received correctly by the operator on shipboard and turned over to the navigator.

5. Ships many miles at sea cannot make use of this system, as they are beyond the range for good direction finder work. It is only within a range of 100 to 200 miles of the land direction finder stations that a ship may make use of them. When a ship is far at sea they are of little use.

6. In time of war, a vessel transmitting to the direction finder stations would also be giving her position away to the enemy, who could locate her with their own direction finders installed on shipboard.

### One Ship Can't Locate Another

7. A neighboring ship or ship in distress cannot be located by another ship by means of this method. In case a ship is in distress, it is necessary for the land direction finder station to obtain a fix on the ship in distress, transmit the information to a neighboring ship, get a fix on that ship in case its location is uncertain, and then the latter ship may proceed to the one in distress. It will be apparent that this is a rather roundabout method. Furthermore, the location of a ship in distress, if distant from land, is impossible from shore direction finder stations, but the direction of such a ship can be obtained by other ships equipped with direction finders. The location of a neighboring ship in distress is one of the most important applications of the direction finder, and it is important that the quickest and most accurate methods be employed.

8. It is impossible for a vessel to keep constantly in touch with the shore direction finding station and thus keep check on its course after it has once obtained its position. This can be done with direction finder on shipboard, as bearings may be taken on beacons whenever desired.

9. Another disadvantage of direction finding stations on shore is the lack of control of the decrement of the transmitting apparatus on the ships from which the bearings are obtained. A transmitting set emitting a broad wave will transmit a signal from which it is more difficult to obtain an accurate radio bearing.

### Some Counter-Arguments

B. Advantages of direction finder on shore:

1. The cost of a direction finder installation on shipboard is eliminated. This cost is, however, negligible as compared to the value of such an installation even in a single instance where the time saved may result in the saving of many lives.

2. A direction finder installed on shore should require but one calibration. This is true except in cases where power or telephone lines are installed in the neighborhood after a calibration has been made.

3. Any ships with a radio transmitting set may obtain bearings. This is a most valuable feature at the present time, since most ships have transmitting sets but no direction finder.

4. The radio compass on shore is fixed in position, making possible more accurate bearings than can be obtained on a ship in a heavy storm. For marine navigation an accuracy of two or three degrees is sufficient, since a ship cannot hold a course any closer than this. (Many of the larger ships do not roll appreciably except in very heavy weather.)

5. The radio compass bearings on the vessel may be made simultaneously by two or more shore stations and in that manner fix its bearings from the several stations at the same instant.

6. In time of war it would be possible to limit the furnishing of positions to friendly vessels. But by transmitting the required signals the ship is in danger of disclosing her position to enemy ships equipped with direction finders.

### The Finder on Board Ship

The disadvantages and advantages of the method of installing the direction finder on shipboard are as follows:

A. Disadvantages of direction finder on shipboard:

1. In very rough weather the bearings obtained are perhaps not quite as accurate as those obtained by means of the shore system. The only error in direction finder bearings caused by a heavy sea is the possible error of a degree or two in reading the magnetic compass. The operation of the radio direction finder itself is but little affected. Bearings taken under such circumstances are, however, sufficiently accurate for navigational purposes. The effect of this error is less as the beacon is being approached. This is especially true as a light-vessel beacon at a harbor entrance is approached. In other words, the nearer the approach to danger (land) the greater the accuracy.

2. In some cases where wooden ships carry a metallic cargo, it may be necessary to recalibrate with the cargo on board. If the ship has a metallic hull, which most ships do, a metallic cargo inside this hull should not alter the calibration, since the distortion of the wave front should be practically the same in both cases. Wooden ships that carry such cargo must

swing ship anyway to correct the magnetic compass, so a radio compass calibration could be made at the same time.

3. Lack of radio beacons. At the present time (March, 1922) the fact that there are only four radio beacon installations is somewhat of a handicap, but as stated previously, many more beacon installations are planned for by the lighthouse service, as soon as funds are available.

4. Interference caused by two or more radio beacons operating simultaneously. Some interference is experienced between the different beacons where more than one is installed at a harbor entrance and the ship is approximately equidistant from any two. This is overcome to a great extent by giving each beacon a different time interval of transmission so that they will never get in step, and periods of time will occur when one may be heard operating alone. Also by the use of modern transmitting apparatus, the sharpness of tuning is increased so that a slight difference in operating wave length of the three beacons will make poosible the elimination of interference by tuning. Different tone frequencies are of help. Also as a beacon is approached, interference is not objectionable on account of the increased signal strength.

### Navigator is More Confident

B. Advantages of direction finder on shipboard:

1. One of the chief advantages of locating the direction finder on board ship with beacons on lightships and lighthouses is that any number of ships may obtain bearings simultaneously, as often as desired and when desired, without the necessity of waiting in turn. Also the necessity of any transmission other than that of the radio beacons is eliminated, thus reducing the ever-increasing interference problem. This advantage is a valuable one, especially in congested harbor entrances such as New York and other large ports.

2. The navigator. being the operator of the radio direction finder himself, becomes familiar with its accuracy and is thereby able to judge its merits and is consequently made more confident in his own bearings than he would be in those furnished him from shore, which he played no part in obtaining.

3. No extra personnel or houses are required. The radio direction finder as developed by the bureau of standards in co-operation with the lighthouse service is of such a simple type as to be readily operated by the navigating officer of the ship, who may have no knowledge of radio. The system is easily installed and no knowledge of the International Morse or other telegraph code is needed. The apparatus may need occasional attention, which may be given by a port inspector, who could take care of a number of direction finder installations.

The design of the radio beacons is such that they are entirely automatic in operation and are put into service by the lighthouse keeper by merely pressing a button. An occasional inspection of these beacons is necessary, which may be made by one man hired for that purpose. The radio direction finder is installed in the pilot or chart house and the beacons on lightvessels and lighthouses, so no extra housing structures are needed.

### Possibility of Error Reduced

4. The possibility for error in getting a bearing is greatly reduced as the information is handled but once, the bearing being read directly on the magnetic compass by the navigating officer. It will be noted also that this method is a great time-saver, as the information is obtained directly in contrast to the other method, where it must be handled five times.

5. This method gives the ship the advantage of the use of radio bearings when far at sea, for, by means of long-range radio beacons, bearings may be obtained when many miles out.

6. This method has strategic military advantages, in that a ship may obtain her own position by means of the signals from the radio beacon stations, without thereby disclosing her position to the enemy.

7. A leading bearing may be obtained on light vessel radio beacons stationed at harbor entrances, thus enabling the ship to approach the harbor entrances without the necessity of a "fix" or three-point bearing. Leading bearings may also be given by radio beacons located on shore.

8. In special cases the radio direction finder may be used by the ship's radio operator as a means of eliminating an interfering station when it is desired to receive an urgent message.

9. By means of low-power beacon signals sent from ships at intervals during fog, vessels equipped with direction finders will be able to keep clear of all other ships sending these beacon signals, thereby avoiding collision.

10. With the direction finder on shipboard, the navigator may keep in almost constant touch with the radio beacon, rechecking the bearings as often as desired, and thus eliminate any possible chance of errors of any but negligible magnitude. Furthermore, in using a leading bearing, no matter how faulty the adjustment of the magnetic compass may be, it will result in no error in the ship's course if the radio bearing is taken and the ship navigated from the same compass.

### In Time of Disaster

11. Paramount among the advantages to be gained by using the direction finder on shipboard instead of ashore will be the value of such an installation in times of disasters at sea. By means of a few radio signals from a ship in distress a second ship equipped with a radio direction finder may obtain a leading bearing to the vessel in distress and thereby proceed immediately and directly to the rescue, either in fog or clear weather. When the scene of disaster is reached, if lifeboats are adrift in the fog and full of survivors from the wreck, they may be located and picked up by means of beacon signals from low-powered hand-operated radio transmitting sets installed on the lifeboats. No knowledge of the code is necessary. The importance of the use of the direction finder for this purpose will be apparent when it is realized that many instances have occurred where lifeboats adrift in the fog in the open ocean were not located until it was too late to save those aboard, and cases are on record where boats full of survivors were never found.

### The Alaska Wreck

A striking example of the need and advantage of installing the direction finder on shipboard is shown by the following incident:

At about 9:15 on the night of August 6 (1921), the steamship Alaska, from Portland to San Francisco, carrying 136 passengers and a crew of 84, struck Blunt's Reef, off Cape Mendocino in Northern California, in a heavy fog and sank in about 30 minutes. Throughout this time the Alaska sent out distress signals and the steamship Anyox reached the scene of the wreck from a distance of about ten miles at about 11:15 p. m., and with the assistance of other boats which came later rescued many persons. Forty-two lives were lost. The Anyox had a barge in tow, which made it extremely difficult for her to stop or start or maneuver around in the fog. The steamship Wahkeena was only about fourteen miles from the Alaska at the time that the first distress signal was transmitted and responded promptly, but did not reach the scene of the disaster until 7:30 a. m. the next day. For two hours prior to the grounding of the Alaska its radio operator had been trying to obtain radio bearings by transmitting to the radio compass station on shore, at Eureka, California, but had been unable to get in communication with that station. The failure to obtain radio bearings was due in part to the fact that a large number of ships were endeavoring to obtain radio bearings at the same time. The Wahkeena did not rescue any persons. Neither the Alaska, the Anyox nor the Wahkeena was equipped with a radio compass.

If the steamship Alaska had been provided with a radio compass, and radio beacon transmitting stations had been established on the lightships and on shore, the radio operator on the Alaska could have determined her position at frequent intervals, and the wreck would probably never have occurred. If the Anyox had been provided with a simple radio compass, it could probably have reached the Alaska before it sank, instead of requiring two hours. If the Wahkeena had been equipped with a very simple type of radio compass, her radio operator could have very promptly determined the direction of the Alaska, so that the Wahkeena could have reached the Alaska in about an hour. The installation of radio compass equipment could thus have in all probability saved many lives and valuable property. The provision of radio compass equipment on board ship is obviously of particular importance in cases in which there are uncharted currents, since in such cases the setting of a course by dead reckoning in a fog may be disastrous.

From the above considerations and as a result of experience with both systems of direction finding, it is believed that the place for the direction finder, like the magnetic compass and other navigating instruments, is on shipboard in the hands of the navigating officer.

# A COMPLETE SEA CRUISER

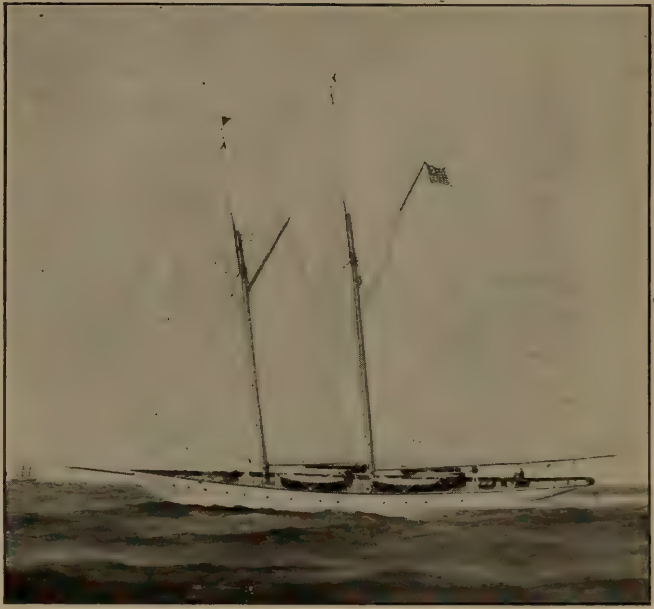
KEITH SPALDING is the latest sportsman to turn to deep-sea cruising as a means of recreation. He is now having constructed an auxiliary schooner yacht, in which he plans to make an extended voyage in the South Seas, visiting many of the islands that have played so prominent a part in recent literature. With an idea of making such a cruise, Mr. Spalding began looking over the available yachts that were suited for such work, but found that none met his requirements. In order to make the trip in a vessel modeled after his own ideas, Mr. Spalding commissioned the veteran naval architect, Henry J. Gielow of New York City, to draw plans and specifications and to superintend the actual construction.

### Impressed by Carnegie

Mr. Spalding was particularly impressed with the remarkable performances of the 156-foot magnetic survey yacht Carnegie, designed by Mr. Gielow fourteen years ago. The Carnegie has cruised 304,750 miles and is still in excellent condition. The unusual history of this boat caused Mr. Spalding to adopt many of her features for his own craft. The new Spalding yacht is being built by the Bethlehem Shipbuilding Corporation at the Harlan Plant, Wilmington, Delaware. The contract calls for delivery October 1.

The yacht, a two-masted auxiliary schooner, will be 161 feet over-all; beam, 30 feet; depth of hold, 21 feet; draft, when fully loaded, 15 feet 3 inches. The design shows a yacht of smooth, symmetrical lines, with no radical features. She will have a liberal displacement, plenty of freeboard and a generous lateral plane that should give her steadiness and make for easy handling in a heavy sea. The lines are fair and easy, running in an unbroken sweep from stern to taffrail. The sheer is moderate and the overhang proportioned to give the maximum protection in a seaway. The hull will be constructed of steel throughout and will be of ample strength for ocean cruising. The deck will be of teak and the hatches, skylights and exterior fittings built to withstand the heaviest weather. The main saloon is to be 19 feet long by 14½ feet wide.

The owner's and guests' quarters are in the afterpart of the vessel and will occupy the full width of the yacht for a fore and aft length of 50 feet. They will consist of five staterooms and four bathrooms, besides a trunk room and various closets for gear. In the forward part of the vessel are accommodations for a crew of twelve.


The Spalding yacht as she will appear when completed

### Nelseco Auxiliary Engine

The auxiliary power is to be a six-cylinder Nelseco heavy-oil engine of the diesel type, developing 180 horsepower, which will give the schooner a speed of approximately 8 miles an hour. The fuel capacity gives the yacht a cruising radius of 4025 miles.

The yacht's equipiment will be quite up-to-date and will include an ice-making and refrigerating plant. The small-boat equipment is to be complete and designed for offshore work.

Mr. Spalding has not yet completed his cruising plans, but it is probable that immediately after the yacht is delivered next October she will be given a thorough testing in a short coastwise cruise in the Atlantic. The schooner will then proceed to the Pacific Coast, where she will fit out for the voyage to the South Seas.

# THE CLIPPER SHIP CHALLENGE

## Two Mutinies Marred the First Voyages of Webb's Great Vessel. Her Days Ended Under the British Flag

OF the eight extreme clipper ships launched from the yard of William H. Webb, New York's most celebrated builder, the Challenge, Comet and Young America were the largest and are the best known. The other five, Celestial, Gazelle, Swordfish, Invincible and Flying Dutchman, though smaller, were also regarded as perfect specimens of marine architecture, and the run, bow, shear, masting and general appearance of a Webb clipper were always the subject of favorable comment, no handsomer appearing vessels being seen anywhere. Of the eight, the Celestial (1850) was the first, as she was also the first clipper to be built expressly for the California trade, then in its infancy; and the Young America was the last to be put afloat. Their builder, however, subsequently constructed vessels which, although not clippers, yet established sailing records to be proud of, particularly the Intrepid (built in 1856, lost in 1860) and the Black Hawk.

### Description of the Clipper

The builder's measurement of the Challenge was 2006 tons. Of all American-built clippers, she was exceeded in size only by several from the yard of Donald McKay (mostly built for British owners) and by the Trade Wind (2030 tons, built by Jacob Bell, New York, 1851), and the Queen of Clippers (2360 tons, built by Jackson & Ewell, East Boston, 1853). It must be remembered, however, that these figures are "old measurement" tons, based on rules that were subsequently greately altered, the "old" figures being considerably reduced. When the Challenge went under British registry in 1862, her tonnage was figured at 1347, a cut of about one-third. These facts must not be lost sight of in comparing the supposed capacity of the clippers with that of later models.

The Challenge was built to the order of the important New York firm of N. L. & G. Griswold (nicknamed "No Loss & Great Gain Griswold"), old-time merchants and shipowners, operating mainly in the China trade. Among other well-known vessels of their fleet may be noted four different ships named Panama, all being considered very successful and being replaced as worn out. The operations of the four covered a long period of time and it is the legend that all important stores throughout the States, between sixty and one hundred years ago, had on sale packages of tea marked "ship Panama—N. L. & G. G." Inasmuch as three out of the four ships were well known in San Francisco and two of them helped make that city's history, a little digression may be pardonable. All four vessels were the products of New York shipyards, No. 1, of about 500 tons, being built by Isaac Webb, father of William H., about 1830; No. 2, of 612 tons, was built by William H. in 1844; No. 3, of 1139 tons, a clipper, came from the yards of Thomas Collyer in 1853, while No. 4, of 738 tons, was built by Ward & Bell in 1868. No. 2 did not visit San Francisco. No. 1 carried 205 gold-seekers to San Francisco in pioneer days, passing through the Golden Gate in 1849 after a long passage of 180 days. For a short time she was used as a floating warehouse for merchandise, a so-called "store-ship", but was transferred by her owners, Messrs. Macondray & Company, to Father Taylor and others, who had her converted into a seaman's bethel, and she was used as such for several years. An old-time authority describes her final ending as follows: "Some persons who did not have the fear of God in them stole all the pews one fine night and other parties carried off the pulpit, and that ended the conversion of sinners on the waterfront. The old ship was then broken up by George Howgate." Panama No. 3, of clipper model, was a fast sailer and has to her credit a passage from San Francisco to Liverpool of 86 days, 17 hours, made in 1860; a run of 101 days from New York to San Francisco, made in 1864; 85½ days, Shanghai to New York (67 days from Anjer), made in 1855; 75 days, New York to Melbourne, made in 1856. Panama No. 4 made three passages to San Francisco, her last call being in 1872.

Reverting to the subject of our sketch, the following is a short description of the Challenge:

Her dimensions according to Lloyd's Register were: length, 234 feet; breadth, 43 feet 7 inches; depth of hold, 25 feet 8 inches. She was very sharp with hollow entrance lines and her dead rise at half-floor was 42 inches. Her main mast was 97 feet long, 3 feet in diameter; main yard, 90 feet long, and with the lower studdingsails set the distance from boom-end to boom-end was 160 feet. Her mainsail measured: on the head, 80 feet; on the foot, 100 feet; drop, 47 feet 3 inches, and 49 feet 6 inches on the leach. She had four reefs in her topsails and single reefs in her topgallant sails. At light loadline her sides were 20 inches thick and there was 11 feet of solid timber between the lower side of the keel and the upper surface of the keelsons. She had a clear flush deck, except for a small poop cabin. The cost of her construction was about $120,000. It was said that while lying at the foot of Pine Street, New York, her jibboom, at high tide, reached over the roofs of the stores. The hull was painted black with a gold stripe, and her lower masts were black. She loaded for San Francisco, her initial freight list being about $60,000. Her manifest is said to have been 28 feet long.

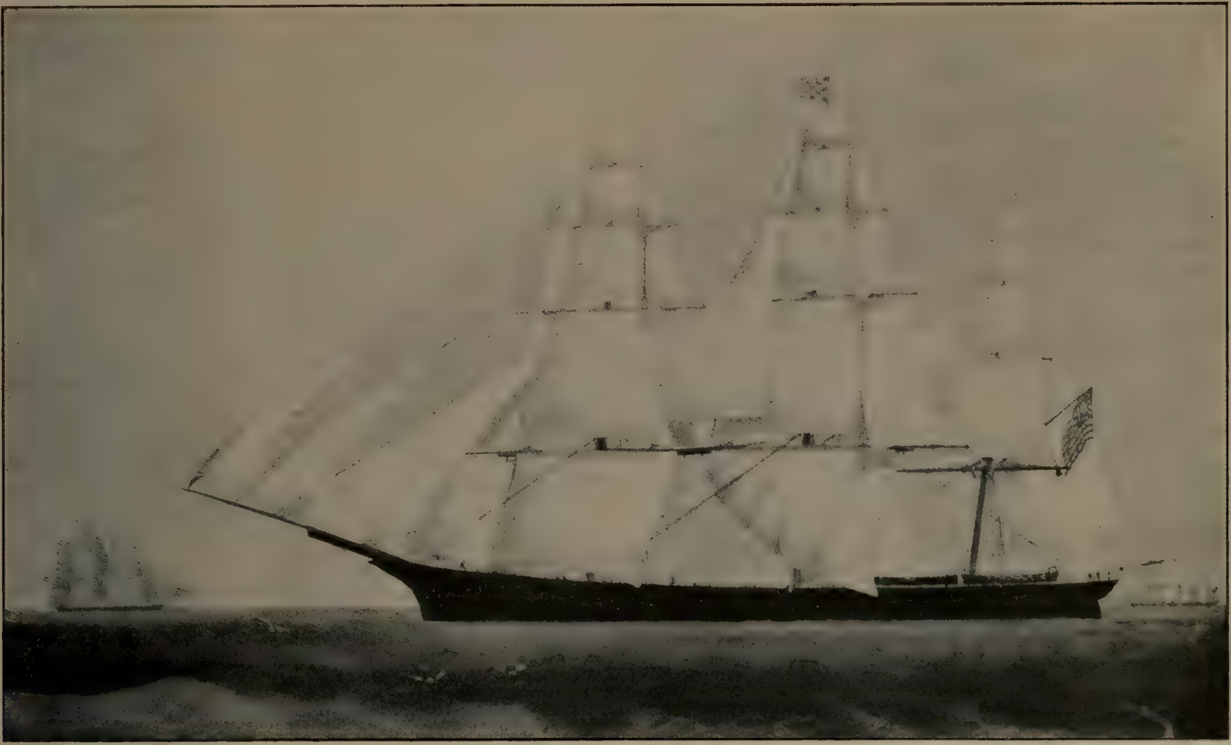
Captain Robert H. Waterman was appointed to command the Challenge on the voyage to San Francisco.

### A Momentous Maiden Voyage

The Messrs. Griswold persuaded Captain Waterman, one of the best known and most successful navigators sailing out of New York but who had retired from a sea life, to take the ship out to San Francisco. The captain had made a number of extraordinarily fast passages in the China trade in the ships Natchez and Sea Witch, some of which, between Calcutta, Singapore and Hongkong, and between the latter port and New York, remain sailing records to this day. It was against his inclination that he agreed to undertake the voyage, as he was then engaged with his friend, Captain Ritchie, in developing a large tract of land in Solano County, California, on which they were laying out the town of Fairfield. The inducements held out were, however, sufficiently great to influence his judgment, as it was stated that if the passage was accomplished within ninety days, a bonus of $10,000 was to be a perquisite. Troubles, however, started before the ship got much farther than Sandy Hook, the crew proving to be inefficient and insubordinate, with many of them diseased, and as the sequel proved it would have been a wise move had Captain Waterman returned to port, as, at first, he contemplated doing.

The voyage was eventful, consuming 108 days, considerable light winds and calms being encountered;

in one stretch of five consecutive days the ship made only a total of 200 miles. The best day's run was 336 nautical miles and best speed 14 knots, ship being under skysails, with the wind abaft the beam. Poorest day, 35 miles. She was twelve days off the Horn in heavy gales, in which, during a squall, three men fell from the mizzen topsail yard and were lost, one going overboard and the others killed by striking the deck. At one time, seventeen of the crew were laid up by disease, five dying on the voyage and eight were off duty, in their berths, on the ship's arrival out. Off Rio, First Mate Douglas was set upon by four of the crew and stabbed in twelve places, his life being saved by Captain Waterman felling the would-be assassins with an iron belaying pin, two being killed outright. Of the crew of fifty-six men and eight boys, only two were Americans; but six out of the lot could steer the ship properly, and this became their only occupation during the voyage. On arrival at San Francisco, authorities were not surprised at the slow passage of the ship, from which so much had been expected, but it was thought remarkable that, in the circumstances, she reached port at all.


The Challenge

### The Vigilance Committee Acts

On her arrival many wild statements were made reflecting on the captain and his officers, even to the extent of asserting that men at work aloft had been shot at and that they had been shaken from the rigging overboard. A mob, incited by irresponsible agitators, collected about the ship, and in the absence of Captain Waterman, who was up town, seized the new master, Captain John Land, who had been sent out by the owners to take command, and threatened to shoot, hang or drown him unless Captain Waterman were turned over to them. At this stage of the proceedings the Vigilance Committee, which was then in charge of the police affairs of the city, interposed; the mob was dispersed; Captain Waterman and Mate Douglas were tried and honorably acquitted of all charges of brutal or unjust treatment. The captain was subsequently appointed port warden and inspector of hulls and until his death on his ranch in 1884, at the age of 76, he enjoyed the best standing and was highly respected in the community.

Captain Land, who took command of the Challenge immediately on her arrival at San Francisco, had been many years in the service of the Messrs. Griswold in noted ships, the Splendid and the Rainbow among others. He was a native of Massachusetts and bore the reputation of being one of the most upright and intelligent shipmasters sailing out of the United States. He was very benevolent and urbane, but withal of great courage. One case is cited when he and three other captains, each with his armed boat's crew, twenty-five men in all, landed at Canton and successfully dispersed a large and violent mob. His courage was not daunted when the San Francisco mob held him as hostage for Captain Waterman and was discussing by what manner his death would be meted out. Neither did he show the white feather when his crew mutinied on the first trans-Pacific voyage of the Challenge, as will appear later. He died at Whampoa of dysentery, July 26, 1852, on the outward passage of the second voyage of the Challenge. Several rusty nails were found in his body, one of which had passed through the left lobe of his lung. They were thought to have been swallowed when he was a boy.

### Mutiny on a Passage to China

The Hongkong Gazette had the following account of Captain Land's experiences on his first voyage in the Challenge: "On account of ill reports of the initial voyage to San Francisco, great difficulty was had in getting a crew there for the passage across the Pacific and it was only by paying advances of $200 per man that forty men could be induced to sign 'for a port in China.' The destination of the ship was Shanghai, but when she was 150 miles from Lukong, between Ningpo and Shanghai, the crew mutinied and threatened to take the ship and throw Captain Land overboard if he would not proceed to Hongkong. The captain, officers, purser and eight disaffected men who had not signed the round-robin handed in, steered for Hongkong, and when outside the port dispatched a letter by boat from the pilot to his agents, resulting in a file of marines being put aboard before the vessel anchored. The crew were compelled to work the ship into a berth between the United States frigates Susquehanna and Saratoga. The sails were tossed up, not furled, and the crew demanded to be allowed to go ashore, which demand was not complied with. They showed their further unruly spirit by expressing the regret that they were not in San Francisco instead of Hongkong, when, they asserted, their venerable captain would be immediately strung up."

The passage across had been a long and tedious one, 54 days being consumed, but on the return trip to San Francisco the fast time of 34 days was made, which stands within one day of the quickest run for this voyage on record. From noon to noon, or one day of slightly under 23½ hours, she ran 360 nautical miles; best day's progress in a direct line, or net gain, 335 miles; best speed, 16 knots; average rate an hour, all voyage, 10 knots; average in a straight line, 9 knots. She left the coast of Japan April 4, making the run thence to San Francisco in 18 days, which has never been equaled by a sailing vessel to this day, as far as known. She sailed in ballast and had 553 Chinese passengers, all being in good health.

After a stay of but seven days in San Francisco, the Challenge was again on her way across the Pacific. According to published accounts of the passage, she did some extraordinary work. She was off the port of Honolulu 8 days out, and the twenty-third day from San Francisco was within 400 miles of Hongkong, a rate of speed never before equaled, and it was accomplished, moreover, with only moderate winds. When she had progressed thus far, however, she was headed off by adverse winds and the small remaining distance took the better part of three weeks to accomplish.

### The Challenge Goes to London

After the death of Captain Land, the command was given to Captain Pitts, who had been chief mate of the clipper ship Witchcraft. Being loaded with tea for London, she left Whampoa August 5, 1852, and arrived in the Downs after a passage of 105 days. Her run of 65 days from Anjer was exceptionally fast and she was but 39 days from the Cape of Good Hope. Her passage was the shortest made by any of the American and British clippers that season and she immediately became the center of much interest. She was so much admired that her lines were taken off for the Admiralty while she lay in the Blackwall dock. She had beaten the Surprise, Nightingale and Race Horse, American, and the Chrysolite, Challenger and Stornaway, British. The Challenge was immediately taken up for a round voyage to China and again led the fleet on the outward passage. On the return, however, she was unfortunate, being obliged to put into Fayal on her ninety-eighth day out, leaking badly; and was forced to discharge her entire cargo. The leaks were in two places on each side of the keelson and in the garboard seam abreast the foremast, caused by strain through carrying press of canvas.

The next round voyage of the Challenge was made under the command of Captain Kenney and was as follows: New York to San Francisco, 118 days (114 days to the Farallones); San Francisco to Shanghai, 58 days, and Manila to New York, 117 days (42 days Manila to Anjer). The published memoranda of these passages show nothing unusual except that she had a hard time for 20 days off the Horn on her outward run. On the following voyage out to Hongkong, the log shows that she came up with and passed the ship Berkshire of Boston and also the bark Eliza of Jersey, both bound in the same direction. On arrival out at Hongkong, she took 800 coolies to Melbourne and on returning to China took another lot to Havana. Her last Cape Horn passage was in 1858, when she made the run from New York to San Francisco in 114 days, being only 55 days from the Line in the Atlantic to the Line in the Pacific. Light winds in the North Atlantic and dead calms in the North Pacific spoiled an otherwise fine passage.

### Captain Fabens Succeeds

On this last voyage Captain Fabens was in command and continued as master until the ship arrived out at Hongkong, dismasted, in 1859. From San Francisco the Challenge went to Hongkong in 37 days, returning in 46 days and then recrossing the Pacific in 49 days. On this latter passage she got a terrible mauling, her log showing: "September 16, 1859, in latitude 21-01 north, longitude 123-17 east, very threatening appearances; gradually coming on to blow; sent down royal and skysail yards, then took in topgallant sails and reefed mizzen topsail. On the 17th, a sudden squall struck the ship with fearful violence, causing all three masts to go over the side, taking with them the three lower mast-heads, bowsprit and everything above, breaking the mainyard, staving two boats (one was blown up in the air by the wind getting under it), seriously damaging the decks, breaking the plank-shear and rails, tearing the copper off in many places and damaging the planking; also lost davits, boat-gallouses, etc. It continued to blow all night and the next day at daylight in a heavy, irregular sea, the wreckage was cut away, only the mizzen topmast and mizzen topsail yard being saved. Got up a spare topgallant mast forward and set the topgallant sail and royal for a topsail and topgallant sail, together with fore and main-sails and two topgallant sails for a crossjack. So managed to reach Hongkong. Only one man was hurt by the falling spars and he had his thumb taken off at the second joint."

After limping into port in her demoralized condition, the clipper was laid up and ultimately sold and repaired. In her damaged condition, it was reported that she brought $9350, her purchaser being Captain Haskell. She showed up at San Francisco June 13, 1861, 51 days from Hongkong, and took her departure for the same port early in July. Under Captain Thorndike she sailed from Hongkong in October, 1861; called at Singapore and Galle and arrived at Bombay December 21, leaking badly. She was sold for 78,000 rupees and docked for repairs. Thence proceeded to Liverpool and, as previously stated, went under the British flag as the Golden City.

### Career Under the British Flag

The following copy of a letter dated May, 1892, from Captain Joseph Wilson, the last owner of the Challenge, to the writer of this history, clears up many conflicting reports of the last years of this celebrated ship:

Sunderland, May 17, 1892.

Dear Sir:

I bought the Golden City in 1866, in London, during a sort of monetary panic. Happening to have some business on board a Calcutta ship in the East India dock, I passed over the deck of this ship, and observed what a magnificent main deck she had. I was informed by the ship-keeper that she had to be sold by auction. This man had been employed on my own ships and knew me; showed me all over her. I saw that she was opened out for the emigration inspectors and had just come out of dock, passed and ready for emigrants. The time I had being short, I merely took the broker's name and left. Knowing the owners and all the circumstances accounted for the ship being on the market. All the information I got was, "confounded pickpocket"; "weak"; "won't sail". One man said he "wouldn't be paid to own her". However, I walked down at 6 o'clock the next morning with a couple of wax candles in my pocket and a sort of instrument for constitutional purposes, found all sound and good, and at 10 o'clock I bought the vessel, intending her for second-class work. On arrival at Shields, cut listings out of her to the water line. The frame I found to be as sound as when built and firmly cross-braced by iron diagonal strips. A lot of blocks and other things were found on overhauling her with the name of "Challenge" on them. I looked up Lloyd's and found that that ship had been classed in the book, and after some little bother got all unraveled and proved that this was the same old American clipper Challenge, and consequently entitled to classification on survey. On examination, all was right but the fastening of the outside plank, which was only spiked on. A lot of work had been done and money spent previously. I retrenailed her throughout and extra bolted her; shortened upper spars and sent her to sea.

She did very well first voyage; was difficult to keep in trim but made a good run home. I recollect seeing her log from New Orleans; there were several days with over 300 miles; I then sent her to India and she was principally employed in the Bombay and Java trades. She ran out to Bombay in 71 days; thence to Rangoon was 11 days. She made very good passages, but in general was not, with me, the very fast ship she had been originally. On a wind, going clean full, or all sails drawing, she was hard to beat; she was a dangerous ship to stay, that is, in a strong wind and sea, and that was eventually the cause of her loss. Though to look at, in every way of a very handsome appearance both in hull and rig, no handsomer to be seen, yet in detail there were serious errors. The principal error was a hollow water-line; this was such a mistake; a good sized pilot coble, in trying to get alongside in perfectly smooth water with ship towing only 7 knots, was upset by the curl of the wave caused by this hollow; a sea of three feet was always curling up between the stem and the fore rigging when going fast and in ballast especially; this effectually stopped her from being the very fastest vessel afloat. She was very stiff and rolled with a heavy cargo, but on the whole did her work well. On her last voyage to Java, in a heavy gale off the Cape of Good Hope, when running before it and going 12 or 13 knots, a sea broke clean over her quarter, swept seven men off the main deck, killed the captain on top of the house; took clean away the wheel and officers' house; one man at the wheel was saved by holding on to the mizzen rigging ten or fifteen feet above the poop; all the officers in the house were gone but the third mate, my nephew; he was caught by the smashed beams and found very much injured, but recovered. The ship made no water and arrived out, but another captain had to be sent out. The ship lost her season and had to go on to Calcutta and eventually made a most disastrous voyage. She was lost on the next; in consequence of her bad propensity in staying she came up well enough, head to the wind, off Scilly; got sternway; she came around but twisted off her rudder and reached over to the French coast, where she got among the islands off Ushant. The crew left her and a French gun-boat got hold of her and a lot of wooden-shoed and wooden-headed fishermen and instead of towing the ship stern foremost, took her by the bow, when she took a shear and went on a reef of rocks. Being so sharp on the bottom she upset and broke up off Aberbrache. This was the end of her, winding up with a loss of over £10,000 to me.

I have a photograph of her, but there is another photo of one of my other ships on the back of it, the Gloriana, built on the Tyne by Smith Sons, who were, with Wigram & Green of London, the largest East India shipowners in England at that time, and built men-of-war for our government and others. . . .

It is now sixty years since I first went to sea and forty-three years since I first went as captain to India on a small clipper called Chanticleer, 290 tons. There was no regular mail then, let alone telegraphs. I got out to Mauritius and back and was off the Tyne on a thick, black day in February, and the owners had no account of my having left the island and neither ship nor cargo insured. Having passed the Downs on a Saturday and no letters delivered or sent out of London until the Monday night, and my letters had not come to hand, I got in at 11 o'clock at night and had had precious little sleep since leaving the Western Islands, so I suppose I slept pretty well. I had landed mails and the government dispatches in 62 days.

Off the coast of South America about the middle of the last century. The small ship in the center is the John Bryce, owned by the English firm of John Bryce, which later became Bryce, Grace & Company and then Grace Brothers Company.

# THE EMPRESS OF CANADA

## New Canadian Pacific Liner will be the Largest Vessel Ever Employed in Trans-Pacific Service

THE new Canadian Pacific liner Empress of Canada, which is nearing completion at the yard of the Fairfield Shipbuilding & Engineering Company, Glasgow, will be the largest vessel ever employed in any trans-Pacific service. (She will ply between Vancouver and the Orient, with calls at Honolulu on her winter westbound voyages.) The Hill steamship Minnesota, which was withdrawn from the Puget Sound-Oriental service several years ago, had had the distinction of being the largest Pacific liner, but even she is surpassed by the Empress of Canada. A comparison of the dimensions of the two vessels will be of interest:

| | Length | Breadth | Gross |
|---|---|---|---|
| Minnesota | 622 | 73.5 | 20,602 |
| Empress of Canada | 653 | 77.7 | 22,000 |

On the score of cargo capacity, however, the Empress of Canada, with a deadweight of only 9500 tons, cannot vie with the 20,000 of the Minnesota. The new vessel, on the other hand, has unusually large passenger accommodations for a Pacific liner, as she can carry about 500 first, 100 second, 240 third and 930 Asiatic steerage passengers in addition to a crew of about 550.

The Empress of Canada is of the shelter-deck type with a bridge deck extending almost her entire length, long promenade and boat decks, two complete 'tween decks and lower and orlop 'tween decks fore and aft. Her cellular double bottom runs almost her entire length and gives storage for fuel oil, feed water and water ballast. There also are oil bunkers, some of which form a double skin in way of the boiler room. All in all, the vessel will be able to steam 14,000 miles without rebunkering. Fresh water tanks, besides being in the double bottom, are situated alongside the shaft tunnels.

Propelling machinery consists of two sets of Brown-Curtis turbines driving twin screws through double reduction gearing. The "Nodal drive" has been fitted to reduce vibration. There are eight double-ended and four single-ended cylindrical return-tube boilers, situated in two separate rooms. They employ Howden forced draft. Conversion from oil to coal may be made quickly. Each boiler room has a complete duplicate system of oil pumps, heaters and fittings. On her trials the Empress of Canada developed 24,000 horsepower and attained a speed of 20.28 knots.

There are three sets of main electric generators, turbine-driven, and in addition there is an emergency electric plant operated by an oil engine on the boat deck. The cargo-handling equipment consists of derricks and twelve electric winches. A telephone system connects all suites, specal rooms and offices. The vessel has wireless telegraphy and submarine signaling equipment and a gyroscopic compass.

The smoking room, Empress of Canada, looking toward the fireplace

Lounge of the Empress of Canada, showing the dome

## "NATIONAL PROGRAM" FOR FOREIGN TRADE

THE National Foreign Trade Convention has suggested that a "national program" be adopted for American foreign trade during the coming year. This program, which summarizes briefly the "final declaration" of the Philadelphia meeting, is commended by the National Foreign Trade Council in this language: "It is our belief that the widest dissemination and recognition of the above points will aid materially in hastening the return of domestic prosperity." The "national program" follows:

1. An expanded foreign trade to insure the prosperity of the United States.
2. Sale of foreign securities to American investors; and handling such foreign loans in such a manner as to stimulate American exports.
3. Development of a trans-shipment trade through the creation of foreign trade zones.
4. Creation of debenture-issuing corporations under the Edge Act to extend long term credits; and the financing of such corporations through the return to member banks of the Federal Reserve System of the subscription of 3 per cent of their capital required to capitalize originally the Federal Reserve Banks, such refunding to be conditional on the reinvestment of these funds in the stock of corporations organized under the Edge Act.
5. Elimination of the excessively high income surtax rates.
6. Active support of the American merchant marine by American shippers and travelers; and the development of a governmental tax policy which will permit of depreciation charges sufficient to reduce the capital investment in shipping to present market values.
7. Enactment by the various states of marine insurance laws in conformity with the model law recently enacted by Congress for the District of Columbia.
8. Further development of simplified and standardized documents of foreign trade.
9. Tax exemption of the foreign income of Americans resident abroad.
10. Bargaining tariff sufficiently flexible to prevent discrimination against American exports and imports.
11. Increased efforts to educate Americans in all parts of the United States to the importance of foreign trade to every man, woman and child.
12. Activity, courage and persistence at the present time in order to expand American foreign trade.

Children's room, Empress of Canada

The Empress of Canada's swimming pool

Reception room and ballroom, Empress of Canada

# THE H. F. ALEXANDER

The H. F. Alexander, formerly Columbia, formerly Great Northern, after being reconditioned by the Sun Shipbuilding Company

WITH the arrival of the steamer H. F. Alexander of the Admiral Line coastwise service, aptly described as America's fastest and most distinguished steamship, a new epoch in Pacific coastwise maritime affairs is begun. The vessel (formerly Great Northern) has just come from the yards of the Sun Shipbuilding Company, where she has been reconditioned for service between Seattle, Victoria, San Francisco and Los Angeles at a cost of more than $500,000. On both the Pacific and the Atlantic she has made world records for speed. The last honor bestowed upon her was her commission as civilian flagship of the Atlantic fleet. During the war she completed 72,000 miles in ten months, making twenty trips to and from France with troops. On one of these she made a round-trip record New York to Brest of 12 days, 1 hour and 35 minutes. In her trooping operations she was more than once in peril in the war zone, but always succeeded in showing her heels to any of the enemy underwater craft.

The H. F. Alexander is 525 feet long, has a beam of 63 feet, is 50 feet deep and has a displacement of 12,000 tons. She is propelled by triple screws, driven by Parsons turbines of 25,000 horsepower with steam furnished by oil-burning boilers. Her cruising speed is 23 knots an hour, though she has exceeded this when occasion has demanded. Her beam assures stability, while her turbine drive overcomes the jerky forward thrust common to the reciprocating engine and thus reduces vibration to a minimum. Being an oil-burner, the long and dirty process of coaling is obviated.

The vessel is equipped to carry 650 first-class passengers, 200 in other classes, and is manned by a crew of 200 hands. The first-class accommodation includes thirteen de luxe suites, two finished in birdseye maple, two in white mahogany, two in French walnut, two in red mahogany, one in oak and four in special white enamel with panel effect. In these are standard double beds, single or twin beds. These throughout the vessel are of standard steel tube construction and the bedding and upholstery is all new. Every room has running hot and cold water, thermos bottle, electric fan, radio phone and heating apparatus, which may be regulated by the passenger. The rooms also are connected by telephone through the ship's own central, shore connections being made by trunk lines as soon as the vessel is berthed.

The total first-class berthing arrangements include 354 rooms and accommodations for 655 people. The public rooms are furnished in a lavish manner. These include observation room, writing rooms, social hall, large dance hall with hardwood floor; smoking room, women's boudoir, music room, veranda palm garden, spacious dining room in Colonial style with party tables and glass enclosed open air dancing pavilion.

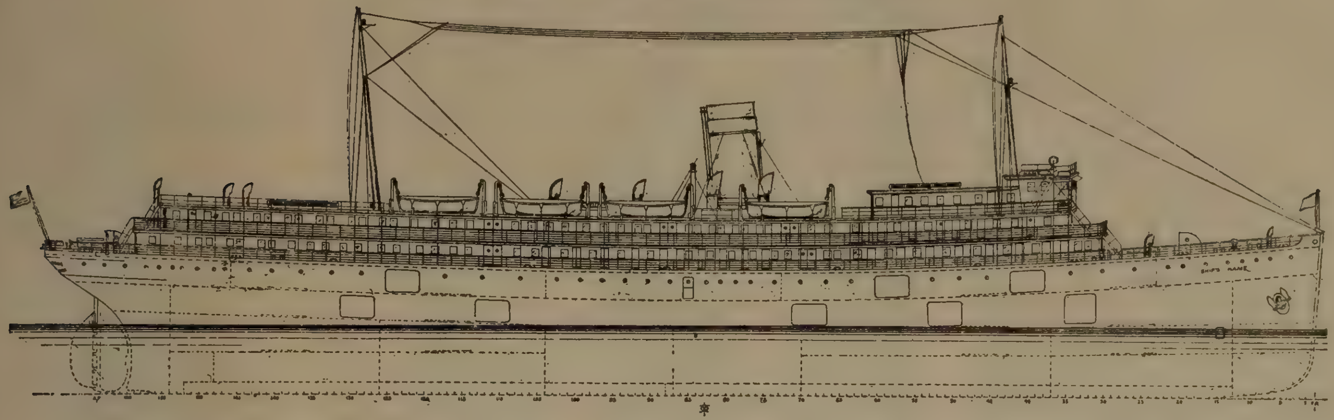
The observation room is finished in light gray with clouded ceiling effect and mole carpet and satin draperies to match. The chairs, lounges and divans are upholstered in tapestry to blend with the general color scheme. The daintiest room imaginable is the women's boudoir. It is painted in old rose, paneled and enriched with fine moldings and with furniture in old ivory. The writing room is amply equipped. The carpet is of dark blue with small figure and the draperies are of the same tint, the whole producing a restful effect. In all the public rooms the decorators have produced a good combination of the artistic and the utilitarian. The smoking room is finished in fumed oak, and the massive chairs are overstuffed and upholstered in heavy Spanish leather. From the smoking room one steps onto the veranda palm garden, in which are small tables and rattan chairs with spring seats. The social hall is an imposing apartment with the most inviting lounges and large heavily upholstered chairs. In the center is a concert grand piano. The dining room is a singularly handsome and airy apartment. It stretches the entire width of the ship and carries out the general air of roominess that characterizes every part of the liner, giving one the impression of being in a large hotel and getting away from the "cribbed, cabined and confined" feeling that one generally has aboard ship.

All the forward end of the promenade deck is glass enclosed. Here again is another piano and on warmer nights the large jazz orchestra will play. The passenger accommodation is divided between A, B and C decks.

Every device that would increase the comfort of her passengers and the stability and safety of the vessel has been installed in the H. F. Alexander. The lifeboats will accommodate 926 people, and in addition there are life preservers in every room and in racks about the decks. On the top deck there are a number of unsinkable life rafts supported on pontoons, and there is also a power lifeboat capable of taking the others in tow. There are three separate fire alarm devices, including the aero fire alarm system, while in the wheelhouse is an ingenious device by which the officer on watch is apprised instantly of fire in any part of the vessel, and in event of an outbreak there is apparatus that can be set in motion instantly, and will isolate the affected area and pour wet steam into it. The vessel is built on the cellular system, has a double bottom and is divided by numerous watertight bulkheads.

# TWO COMBINATION VESSELS

## Federal Shipbuilding Company Awarded Contract to Construct Sister Steamships for Merchants & Miners Transportation Company



Outboard profile of vessels to be built for Merchants & Miners Transportation Company by Federal Shipbuilding Company

ON the list of new construction, two combination vessels to be built by the Federal Shipbuilding Company, Kearny, New Jersey, for the Merchant & Miners Transportation Company, Baltimore, have an important place. With a combination vessel for the Inter-Island Steam Navigation Company, Honolulu, to be built by the Sun Shipbuilding Company, Chester, Pennsylvania, they are the first steamers of their class to be ordered for a long time, but they are regarded as being forerunners of quite extensive construction that should develop within the next year.

The Merchants & Miners vessels will be built on the Isherwood system. Their dimensions will be as follows: length over all, 368 feet; between perpendiculars, 350 feet; breadth molded, 52 feet; depth to hurricane deck, 35 feet; to main deck, 27 feet 3 inches; draft, 19 feet; indicated horsepower, 2700; sustained sea speed, 12 knots; displacement, 7000 tons.

Each vessel will have 105 staterooms, which will accommodate 206 passengers or so. The cabin accommodations will be quite up-to-date and each room will have hot and cold running water, shower baths, etc. A system of mechanical ventilation will supply adequate fresh air to all rooms.

Four complete steel decks will make for safety at sea and reduction of danger from fire. Adequate bulkheads, in accordance with the regulations of the Steamboat-Inspection Service, will be installed, and, in general, the vessels will be built to highest class of the American Bureau of Shipping. Much attention has been paid to stability, which is probably a more important attribute in coastwise vessels (the craft being designed for the Baltimore or Philadelphia-Savannah or Jacksonville service) than it is in deep-sea craft, inasmuch as passengers on the latter class usually are better sailors and have a better opportunity to get their sea-legs before a voyage ends.

Each vessel will have four single-end Scotch boilers equipped with Howden forced draft; will burn oil, and will have superheaters and Diamond soot-blowers. The engines will be four-cylinder triple-expansion of 2700 indicated horsepower. Auxiliary machinery, condensers, pumps, etc., included, will be supplied by the builder. General equipment will include: one 15-kilowatt and two 50-kilowatt generators; one two-ton ice machine; ten winches, two to the hatch; hand and steam steering gear; seven lifeboats, each having capacity for 42 persons, and one motor boat, which could tow the others.

The Federal Shipbuilding Company expects to lay the keels of the vessels July 15 and August 15, to launch them November 15 and December 15, and to make delivery January 15 and February 15.

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### WESTINGHOUSE REPORT

IN spite of adverse conditions of the past year, the sales of the Westinghouse Electric & Manufacturing Company amounted to almost exactly $100,000,000, as shown by its annual report as of March 31, 1922. This is the largest volume of business handled by the company except during the abnormally active previous three years. Manufactutring costs were high, however, as they could not be reduced as rapidly as prices fell. Furthermore, the expenses of development work and about $1,500,000 for depreciation of inventory were charged against manufacturing costs, so that the increase in surplus was only slightly greater than the amount paid out in dividends.

The excellent "cash position" of the company is shown by the fact that its current assets, including cash, United States securities, and accounts and notes receivable, total $41,700,000, while its current liabilities (accounts payable, dividends unpaid, and accrued interest, etc.) are only $11,400,000. In addition, the company possesses an inventory of $55,000,000.

Chairman Guy E. Tripp states in his report: "The contraction in orders booked continued throughout the year until January, 1922, when there began a substantial improvement, which has since been maintained. In addition to the favorable indications for an increasing demand for the regular lines of your company's products, a large demand for radio telephone receiving apparatus has recently developed with a prospect of its continuance for an indefinite period. It should be pointed out, however, that the ensuing year promises to be a period of keen competition."

The income account for the year is as follows: gross earnings, $99,722,026.09; cost of sales, $93,461,846; net manufacturing profit, $6,260,180.09; other income, $2,673,808.65; gross income, $8,933,988.74; interest on bonds and notes, $3,096,600.08; net income available for dividends, etc., $5,837,388.66.

# A NEW $10,000,000 CORPORATION

Officers of the Los Angeles Shipbuilding & Drydock Corporation with Frank L. Buckley of the Massett Timber Company inspecting the site of the first sawmill to be erectet at the shipyard. Left to right: L. V. Hedrick, comptroller; Erle M. Leaf, vice-president; Frank L. Buckley; Fred L. Baker, president; John Murray, works manager.

AS was reported last spring, Fred L. Baker and Erle M. Leaf, president and vice-president of the Los Angeles Shipbuilding & Drydock Corporation, went to Europe to complete negotiations with English and Scotch interests with a view of increasing the normal peace-time activities of the Los Angeles shipyard by the establishment there of a permanent and basic industry.

These gentlemen returned from Europe in May. It is now announced that as the result of their negotiations a new $10,000,000 corporation is in process of organization to take over the property and interests of the Los Angeles Shipbuilding Corporation and those of the Massett Timber Company, Ltd. Plans have been made for immediate construction of sawmills, box shook, lath and shingle factories at the Los Angeles yard and for the construction of six or more steel lumber schooners, to be operated in the transportation of rough sawed logs from the British Columbia property to the Los Angeles harbor and of the finished and dressed lumer, boxes, shingles and laths to Pacific Coast and certain off-shore markets.

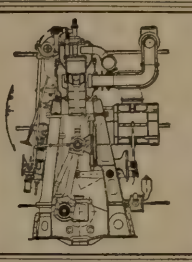
The Los Angeles shipyard, with its seventy-acre site in the west basin of Los Angeles harbor, was developed and equipped considerably beyond normal peace-time shipbuilding and repair requirements at that point, in order that it might meet the war-time demand for steel freighters. The extent, arrangement and facilities of this yard, therefore, are considered to be such as will lend themselves admirably to the adaptation of a great part of the waterfront and yard area to the requirements of a big lumber industry without interfering with the building-ways, fitting-out wharves, machine and other shops particularly required for the active continuation of distinctly shipyard work. It is understood that the plans of Messrs. Baker and Leaf, with their English and Canadian associates, are to push the construction work of the lumber manufacturing plant with all possible speed and also to lay down and build, as rapidly as plans, ways and materials are made available, a minimum of six steel lumber schooners of the most approved type and of a capacity of about 2,000,000 feet each.

The Massett Timber Company's logging rights that come into this new combination are situated on Graham Island about 1500 miles north of Los Angeles, off the coast of British Columbia. They are approached through the Massett Inlet, which from a narrow entrance widens into what is virtually a great lake or inland sea, twelve miles across at its widest point and of deep water. For 145 miles around the shores of this inlet heavily timbered lands rise practically from the water's edge and stretch over the hills and valleys beyond. The logging rights in question cover 110,000 acres, recently estimated to carry between six and eight billion feet of spruce, hemlock and cedar and stated by experts to be the finest single tract of standing timber, when size, quality and logging conditions are considered, on the American continent.

The property is held by the British Timber Corporation, Ltd., which is composed largely of Scotch and English shareholders. The logging rights were secured, and the property opened up in 1917 by Frank L. Buckley of Vancouver, B. C. Sawmills, permanent buildings, logging and camp equipment, calling for an investment of about $2,500,000, have been installed. Under Mr. Buckley's management this property yielded over one-half of the spruce used by the British and French armies for aeroplane construction. This material was of exceptional quality, its grain and size making it particularly suitable for the struts and beams of aeroplanes.

The plans of the new corporation call for the active continuation of logging work and the rough sawing of the product on Graham Island, whence it is to be transported by the company's own line of lumber schooners to the big finishing plant with box factories, etc., at Los Angeles harbor and thence distributed to the Southern California and other markets of the Pacific Coast.

# Oil Engines and Motorships



# TRIAL OF THE M. S. CALIFORNIAN

## First of Two Sisters Built by Merchant and Engined by Cramp for American-Hawaiian Makes Excellent Showing

**Comprehensive descriptions of the American-Hawaiian Steamship Company's sister motorships Californian and Missourian were published in Pacific Marine Review, January number, page 45, and March number, page 161. The following article deals with the trials of the Californian, held early in May. The vessels were built by the Merchant Shipbuilding Corporation and engined by the William Cramp & Sons Ship & Engine Building Company.**

THE motorship Californian ran an unusually successful engine builder's trial May 1 and 2 off the Delaware Breakwater. The vessel left the yard of the Cramp Company at 8:40 a. m. May 1, and arrived at the breakwater at 4 p. m. After adjusting compass, three runs were made over the mile course, with the following results:

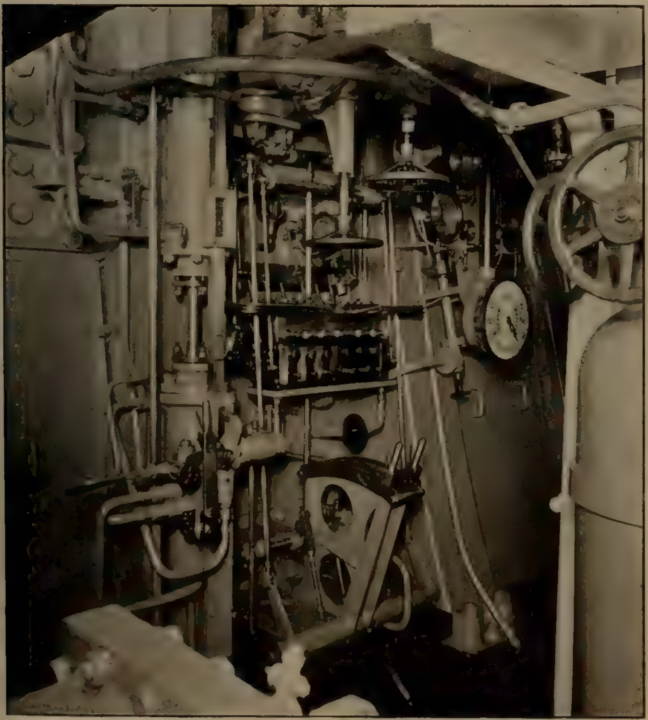
| | |
|---|---|
| R. P. M. mean | 114.62 |
| M. I. P. mean, main engines | 82.8 |
| I. H. P. mean, main engine | 4,330. |
| Knots speed, corrected for tide | 12.57 |
| Slip of propellers | 5.4% |

The maximum speed made over the mile course (uncorrected for tide) was 13.9 knots.

The next day, beginning at 7:30 a. m., a six-hour continuous run was made. This consisted of running two and a half hours out to sea and back, and three and a half hours up the Delaware Bay and River to Reedy Island. Due to the drag of the ship aft, the draft being 8 feet 3 inches forward and 18 feet aft, the speed of the vessel was affected by the depth of the water. For this reason and because of the necessity of following the ship channel, the last two hours were not considered in the consumption test, and the consumption of oil was taken only for the first four hours, when the conditions of drive of vessel were more uniform. In the open sea the engines turned up a maximum of 119.25 R. P. M., corresponding to slightly over 13 knots, without any change in the control of the engines.

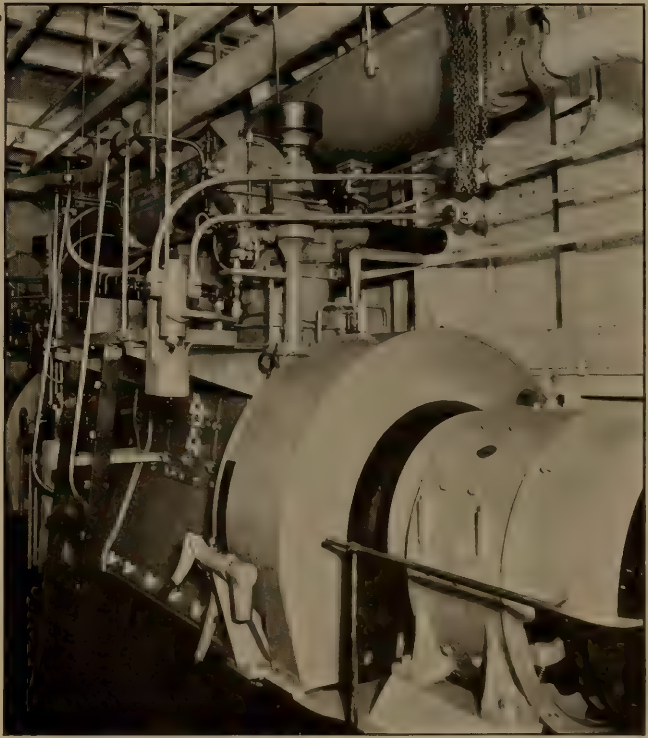
### Result of Consumption Test

The result of the four-hour consumption test was as follows:

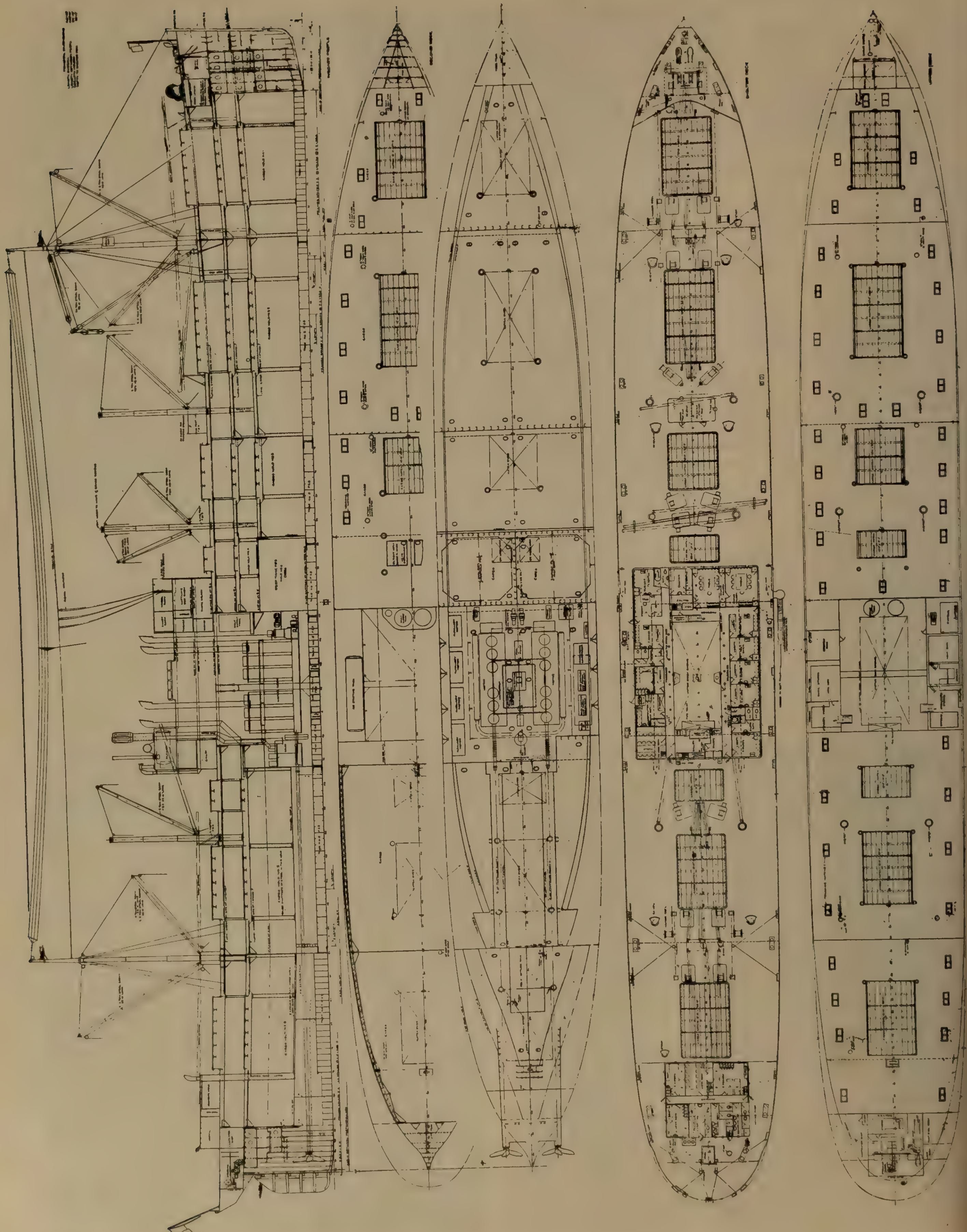


All photos from J. E. Green, Chester, Penn.

View showing main engine control stand



View of auxiliary generator set



Inboard profile and deck plans of Californian

| | |
|---|---|
| Oil consumption, main engines and one auxiliary engine, pounds | 1372 |
| I. H. P., main engines | 4417 |
| Kilowatt load, auxiliary engine | 50 |
| R. P. M., mean, main engines | 117.58 |
| Corresponding speed from standardization runs, knots | 12.9 |
| M. I. P., corresponding speed from standardization runs, knots | 82.13 |
| Oil consumption per I. H. P., main engines only (all purposes), pounds | .31 |

For the first half-hour the consumption was .328 pounds per I. H. P., due to the engines not being yet warmed up, which increased slightly the mean consumption for the four hours.

For the total six hours the results were as follows:

| | |
|---|---|
| I. H. P., main engines | 4445 |
| R. P. M., mean, main engines | 117.29 |
| M. I. P., mean, main engines | 82.80 |

It will be seen that the mean R. P. M. is lower and the I. H. P. higher for the six hours than for the four hours, due to the greater resistance to hull in the shallower water, as previously stated, during the latter part of the run. After the four-hour consumption test was completed, the power of the engines was increased slightly to give their normal M. I. P., 85.6 pounds, corresponding to the designed I. H. P. of 4500 at 115 R. P. M., with the following results:

| | |
|---|---|
| M. I. P., mean, both engines | 85.3 |
| R. P. M., mean, both engines | 118.26 |
| I. H. P., mean, both engines | 4610 |

All inner bottom tanks were filled with oil, and the peak tanks with water in order to get the screws completely submerged.

The mean draft was 13 feet 1½ inches taken in fresh water, or 12 feet 10 inches mean, corrected to salt water, which corresponds to 6750 tons displacement.

After the completion of the trials, the motorship Californian returned at 4:30 p. m., May 2, to the Cramp Company's yard, where the post-trial examination of the machinery was made, and final adjustments to the engines were carried out. The finish coating of painting, which had been left off until after the trials, was put on the engines.

The Californian's windlass

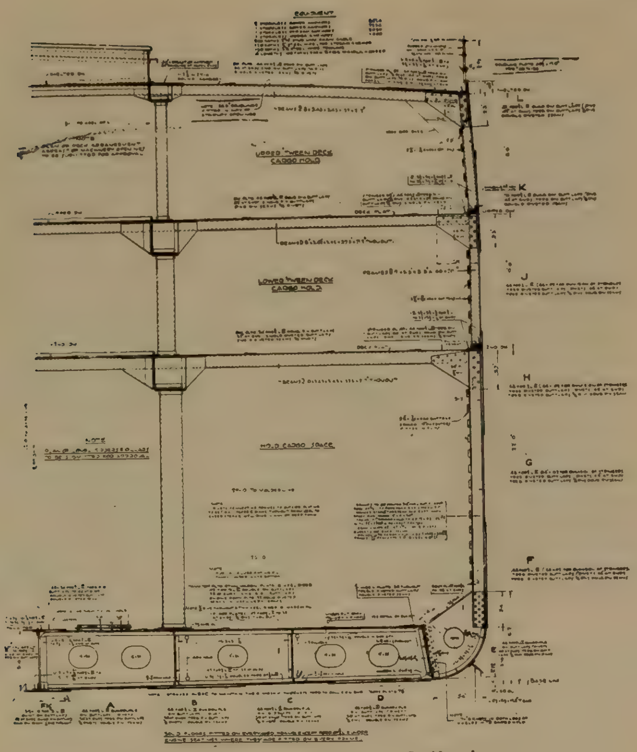
A group of electric winches at the after kingposts

### A Second Test Held

On Friday, May 5, the vessel was taken over by her crew and sailed on the afternoon of May 6 for New York to be drydocked for cleaning and painting of the ship's bottom, which was not done before the trials.

On the run to New York a four-hour consumption test was made from 6:30 a. m. to 10:30 a. m. May 7, with the following results:

Looking forward from the bridge. Nos. 1, 2, and 3 hatches and arrangements of the cargo-handling gear are shown



Half-amidship section of the Californian

| | Port Eng. | Stbd. Eng. | |
|---|---|---|---|
| R. P. M., mean | 115.95 | 116.25 | 116.10 mean |
| M. I. P. | 85.65 | 84.90 | ........ |
| I. H. P. | 2267 | 2256 | 4523 |
| Total gallons | ........ | ........ | 738 |
| Gallons per hour | ........ | ........ | 184.5 |
| Pounds oil per hour | ........ | ........ | 1400 |
| Oil per I. H. P., main engines, all purposes | | | .309 |

The draft of the vessel on leaving Cramp's yard was 7 feet 10 inches forward and 18 feet 5 inches aft, or a mean of 13 feet 1½ inches, which latter corrected to salt water is 12 feet 10 inches, the same as on builder's trials.

All fuel tanks in the inner bottom were again completely filled before leaving Philadelphia, there being a total of 9426 barrels on board. On arrival in New York the draft was 8 feet 1-inch forward and 17 feet 6 inches aft, or a mean of 12 feet 9½ inches. The oil, which was the same on trial as was used for the first voyage, was supplied by the Texas Company and has the following analysis:

| | |
|---|---|
| Specific gravity at 60 degrees Fahr. | .913 |
| Be. corresponding | 23.5° |
| Flash, open cup | 253 |
| Fire | 273 |
| Viscosity Saybolt at 100 degrees Fahr. | 152 |
| Sulphur, per cent. | .60 |
| Asphalt insoluble in naptha, per cent. | 1.11 |
| B. T. U. | 19,120 |

### No Test Stand Run Necessary

The performance of the machinery reflects great credit on the builders. The main engines were not run on the test stand, as is usual with this type of machinery. Due to being a proved design, and to the great care that was exercised in the manufacture, the makers considered the expenditure in money and time required for a shop test not justified. Their judgment was borne out by the trials. The only adjustment required was in the fuel cam throws, which can be quickly adjusted, as they are not integral with the fuel cams proper.

The machinery is practically a duplicate of that of the motorship William Penn, with the exception that there are four auxiliary sets instead of three, due to the Californian having more winches than has the William Penn.

All machinery, both main and auxiliary, was built in the Cramp shops after the Burmeister & Wain system. The main engines are, however, in English units, and not metric, having a bore of 29⅛ inches and a stroke of 45¼ inches.

It is expected that economy will be improved after the Californian has been in service some time, when all bearings and liner surfaces have been run in, and the finer adjustments made to the fuel controls. The latter will require a short time in actual operation to complete.

It is noteworthy that no bearings were raised during the trials, nor adjustments made to them, and at all times the bearings of the main engines were cool. This is primarily due to the great accuracy exercised in the manufacture of the engines, all bearing brasses of each particular size being fitted to a common material. This latter assures also absolute interchangeability without any scraping required.

The Californian on her trial trip

# MARINE INSURANCE

"FRANCIS ADRION," Western Contributing Editor
CHARLES F. HOWELL, Eastern Contributing Editor

## Pacific Developments

### Marine Class Adjourns

The marine insurance study class of the Association of Marine Underwriters of San Francisco held its final meeting of the term on the evening of May 16, 1922. The class will resume activities after the vacation period has passed. It was decided that the first meeting of the fall term would be held on the second Tuesday of September.

The final meeting was well attended and was in the nature of a grand review. The leaders in discussion at previous meetings presented short analyses of subjects discussed during the term. Wilfred Page of the firm of George E. Billings, one of those responsible for the founding of the study class, spoke at some length upon the general intent of the class and expressed himself as being well satisfied with the progress made during the term. During the term the class has devoted its time principally to the policy itself. Clause by clause it has been discussed and analyzed, and, although the subject is far from being exhausted, much has been accomplished.

The class confers a particular benefit upon the younger student attending. Aside from any direct knowledge acquired at a meeting he is furnished with a definite line of thought, enabling him to direct his individual study along the proper channels instead of wandering aimlessly through a textbook. When this idea was first presented many of the older men were inclined to doubt the success of such a class and cited cases where similar movements came to naught. However, the interest manifested by the large attendance at each meeting clearly shows that the incentive is not at all lacking. The student of marine insurance is faced with a maze of technical terms and phrases peculiar to the business, and to be encountered in no other walk of life. Moreover, though he burn ever so much midnight oil, the resulting knowledge will be of a very superficial quality, unless tempered by experience. On the other hand, when a particular subject has been suggested for discussion in class, he is invited to concentrate on this particular problem. What is more, he has the opportunity of hearing the subject discussed after his study, enabling him to deviate from any erroneous conclusion which he has arrived at unaided. The success of an undertaking such as this is in direct proportion to the enthusiasm of those in charge. The Association of Marine Underwriters and particularly the members of the committee in charge, Harry L. Stoddard, George H. Ismon and Frank C. Hutchinson, are to be congratulated upon the success of the class, which is largely attributable to their efforts.

### Pilferage

A continual improvement is to be seen in the theft and pilferage situation. Extensive investigations have been made in all parts of the world with a view of minimizing losses through this cause. Systems of tallying during discharge and supervisions during storage have been instituted where lacking and improved upon where inadequate. It is not at all surprising that our Central and South American ports are still credited (with good cause) with being the most flagrant offenders. Nor do the reports in this connection spare the officials of these ports. In fact, the underwriter faces here the most regrettable condition possible, namely, the pillage of goods in the hands of government authorities. In some quarters the strain has overtaxed even the most confiding of underwriters and this coverage has been refused entirely. This has occasioned at least in one instance the appointment of a new chief of customs.

### Must Wharfies Steal?

From another quarter comes an indication of another form of organized thievery. In Sydney recently a wharf laborer pleaded guilty to having stolen a small quantity of silk from the steamship Osterley. To demonstrate how these small thefts run up the second officer of the vessel testified that the loss through pilferage on the present voyage of the Osterley amounted to £2000. During the hearing of the case the police prosecutor, Sergeant Napper, made the following statement: "I do not say that the unions say the men must steal, but there is a gang of thieves on the wharves who will not allow honest men to work with them."

The defendant's attorney asked that the terms of the First Offenders Act be extended to his client, who was a man of good character and had served with distinction in the navy during the war; further, that his client said that he had picked up the silk after it had been dropped by another man, and that the defendant had not been caught breaking open a case.

The magistrate, Mr. Adrian, replied in part as follows: "I do not know of an instance in which a man was caught in the act of opening a case. Goods have been found wound 'round the bodies of defendants. This is a case of cargo pillage. Hundreds and thousands of pounds worth of goods are stolen in this way, but we do not get hundreds and thousands of culprits. We only get the fringe. The benefit of the First Offenders Act cannot be given to such offenders. The defendant is sentenced to three months' imprisonment. There is no fine for this class of defendants, neither can they be treated as first offenders."

The condition existing in Sydney as evidenced by Sergeant Napper's statement emphasizes the necessity of a careful surveillance of all cargo movements. Next to which in importance is the stringent prosecution of offenders when apprehended.

### Casualties

Marine losses like other troubles usually come in bunches. Although some rather bad losses have occurred recently, the San Francisco market has suffered to no great extent. A brief summary of the outstanding cases may be of interest.

On May 1, the steamship Whittier, a small steel tanker, went ashore about ten miles south of Point Arena, subsequently becoming a total loss, together with her cargo, consisting of 10,000 barrels of oil. The vessel was valued at $140,000 and the cargo at approximately $15,000. Very little, if any, hull insurance was placed in San Francisco, it having found its way to London, together with the remainder of the Union fleet.

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FRANK G. TAYLOR, MANAGER, PACIFIC NORTHWEST BRANCH

Laden with a general cargo for Kuskokwim River points the motorship Ozmo went ashore off Cape Blanco May 17. Later the vessel in a water-logged condition was taken in tow by the steamship Daisy for Coos Bay. Here disaster again overtook the Ozmo, leaving her fast aground on the bar with little or no hope of salvage.

Owing to the fact that the vessel was only partially loaded, the loss was not as severe as it would have been had she been bound out from Seattle, where it was intended that she should complete her cargo. Then again, this type of vessel is not looked upon as a very choice risk, and underwriters, generally speaking, accept only a modest line. Therefore, though the loss will approximate $130,000, divided $60,000 on hull and $70,000 on cargo, it is well spread and will not work a hardship in any particular quarter.

The bark Berlin, bound north with cannery supplies, was wrecked May 19 off Ugaguk Island, Alaska. The hull, insured for $20,000, is a total loss. It is estimated that the cargo was worth $130,000, fully insured. A large portion of the cargo is reported to have been salved, but owing to the great expense involved it is thought that the loss on cargo will run about 75 per cent. Here again is food for my optimistic pen. This cargo insurance is placed on a fleet percentage basis and is spread over a large market owing to the large values involved. As these values on northbound cargoes are estimated in some cases as high as $300,000, the underwriter naturally bases his acceptance on this top value. This fact tends to leave him with a much smaller line on the Berlin than he would have been willing to write had she been offered individually.

On May 22, the steamship Virginia Olson with 1,200,000 feet of lumber from Coos Bay for San Pedro was in collision with a United States submarine while attempting to make port in a dense fog. The vessel began to fill and a forced run was made to the E. K. Wood dock, where the vessel settled. The lumber, none of which was lost, was valued at $18,000, and the vessel at $150,000, both fully insured in the San Francisco market. It is estimated that the cost of repairing the vessel will not exceed $8500. Considering the nature of this accident one is disposed to grin cheerfully and remark: "It might have been worse."

The steamship F. J. Luckenbach arrived at San Pedro May 21, having experienced a bad fire on board. A general average deposit of 10 per cent is being collected. It is thought that the loss, when adjusted, will be in the neighborhood of $200,000, and the contributing value $2,500,000. In a rather feeble attempt to preserve the optimistic tone displayed in connection with the preceding losses I might add: "What does one 'G/A' more or less mean in the busy life of the intercoastal underwriter?"

## Colombian Coffee

In the past I have had occasion to remark upon the poor outrun of Colombian coffee. Recently there has been brought to my attention a letter dealing with transportation conditions in Colombia and the conditions mentioned as surrounding the movement of coffee are very enlightening.

First of all, coffee must be dry before it can be hulled, as the machinery will not operate on wet or insufficiently dried coffee. It may be taken as an axiom, therefore, that all coffee is shipped in a dry condition, and the proof of this is that the whole loss in weight on cleaned coffee from time of shipment to sale in the States rarely exceeds 1½ to 2 per cent.

When coffee is shipped on mules from the plantation to the railroad or to the river port nearest the plantation, it has been carefully packed in bags, which are automatically filled by the machine that does the hulling. They are then stitched up and loaded on the mule when a sufficient number of sacks are ready. They are not protected from the weather and may be several days on the trip over the mountains to their destination.

If, upon arrival at railroad or river shipping point, the sacks show signs of wet, they are perhaps stacked in a sunny place which effects a superficial drying. No attempt is made, generally speaking, to open the sacks and dry the whole contents. The writer states as a reason for this that the expense of this operation coupled with the theft from open bags would be all out of proportion to the probable amount of damage the coffee may have suffered. Therefore, when the coffee reaches its destination, an apparently dry sound bag will contain wet or mouldy coffee, which fact has caused underwriters to assume that the coffee was packed wet. The fact is, however, that the coffee has been superficially dried after a shower and the drying has not been sufficient to affect the portion toward the center of the sack.

The transportation (or lack of it) to the coast then follows. The coffee has frequently to lie for months, either in a warehouse or, when the warehouse is full, in the open covered by only a tarpaulin of doubtful utility, at one of the various transshipment points. When, as sometimes happens, there is little or no upward freight, some of the companies will refuse to send up their boats in ballast to remove the coffee. This situation is very common and the coffee gradually accumulates until there is barely room to move about either in the freight warehouses or in the yards.

In closing the writer states that in

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his opinion country damage is principally caused by rain while moving coffee in the open. Much damage is done, however, by storing coffee in rooms insufficiently protected from the weather. As an indication of some of the difficulties to be met with in transporting coffee from the plantation he states that in the wet season the conditions of the roads are very dangerous. Frequently mule and coffee all disappear in a mud hole or fall down the mountain side and are never seen again.

## The "Ayes" Have It

As The Hague Rules 1921 make the rounds of shipping circles it is apparent that the opposition had best go over them once more with a view of discovering some consoling features. For the rules have now been the subject of consideration before a great number of organizations, and approval has followed in nearly every case. In line with the above the Merchants' Association of New York, acting upon a report made by two of its committees, endorses The Hague Rules 1921 and will take steps to promote their adoption for the benefit of United States foreign commerce.

The following may be taken as an indication of the activity of those favoring the adoption of the rules:

Representative George W. Edmonds of Pennsylvania has introduced a bill proposing to amend the Harter Act of February 13, 1893. The bill would make it lawful after a date in 1922 specified to contract for ocean carrying of goods under The Hague Rules 1921, subject to the following interpretations:

(1) Where loss or damage results from unseaworthiness the burden of proof would be upon the carrier or other person claiming the exemption provided in section 1 of Article IV of The Hague Rules to prove that unseaworthiness did not result from want of due diligence in making the ship seaworthy; (2) the burden of proof would also be upon persons claiming exemption under subdivision (q) of section 1 Article IV to show that neither actual fault nor privity of the carrier nor fault or neglect of its agents, servants, etc., contributed to the loss; (3) Article V of the rules would not apply to ordinary commercial shipments, but only to cases where the character or conditions of the property to be carried or the circumstances or conditions under which the carriage is to be performed are such as to reasonably justify special contracts.

The bill has been referred to the House committee on Merchant marine and fisheries.

"FRANCIS ADRION."

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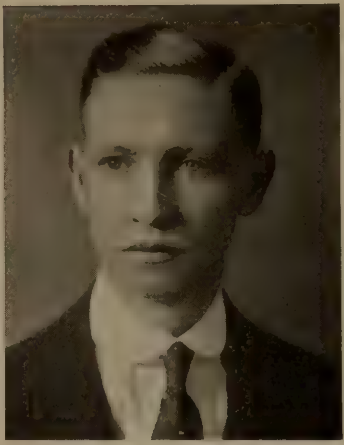
## Fireman's Fund Promotions

W. J. Throckmorton and H. E. Reed have been appointed assistant managers of the Atlantic marine department, Fireman's Fund Insurance Company, under Charles R. Page, manager.

Mr. Throckmorton began his insurance career in Johnson & Higgins' adjusting department in New York in June, 1906, says the Fireman's Fund Record. In 1912 he went with Platt & Farnum, New York marine managers of the Insurance Company of North America, with whom he continued until 1917. During this period he spent one year with the home office of the company. Mr. Throckmorton's earlier work with the Insurance Company of North America was in the claims department, but he was later transferred to the underwriting department, and became assistant underwriter. Mr. Throckmorton joined the Fireman's Fund organization in November, 1917, as underwriter, in which capacity he has been working since that time, more recently having general charge of the underwriting department.



W. J. Throckmorton

H. E. Reed

Mr. Reed joined the Atlantic marine department of the Fireman's Fund in March, 1905, in a clerical capacity. Mr. Reed was almost immediately assigned to work in the loss department, starting at the bottom and becoming fully acquainted with the bookkeeping and reinsurance requirements. He subsequently was promoted to junior adjuster, later receiving various promotions, until the fall of 1917, when he was placed in full charge of the loss department, in which position he has continued.

# On the Atlantic

CHARLES F. HOWELL, Eastern Contributing Editor

## Basis of Marine Rates

Shippers cannot have an intelligent understanding of their marine insurance interests unless they are willing to acquire and reserve for themselves some of the fundamentals of rate-making instead of dismissing the subject altogether, as is generally the case, and trusting the entire matter to their brokers. The purpose of this brief paragraph is to present some of the vital considerations that enter into the determination of the basic marine rate.

First of all, it must be remembered that, although there is no such thing as a general standard tariff in marine underwriting, the rates of the companies are in reality standardized. Changes in the basic rate are made only when changes in basic conditions indicate a permanent change in the value of the risk. Changes of the latter character may arise from improvements in navigation, such as those resulting from inventions of safety devices, or through better methods of packing, or through port improvements, or by changes in trade routes. Temporary variations of the risk do not influence the basic rate; allowance for such temporary conditions is made by an additional or reduced premium as the case may warrant. Therefore it must be borne in mind that basic marine rates are constant and not fluctuating. In the next place, it should be understood that basic rates are scientifically arrived at as the result of years of experience and that they cannot with safety be altered to suit the requirements of the moment.

What are the methods followed and the facts considered by underwriters in the making of these basic rates? Basic rates are founded on the normal methods of conducting trade on certain routes. To determine these normal conditions we must revert to pre-war days. The trades from Atlantic ports of the United States, not south of Hatteras, to the United Kingdom and Continent between Hamburg and Bordeaux are what might be styled the single port full-cargo trades; that is to say, it is customary for a vessel sailing from New York to Liverpool to load a full cargo at New York and to sail direct to Liverpool and there discharge it. In the past the great lines that traded on these routes used one port of loading and one port of discharge. The basic liner rate prior to the war was built up on such service. Nor has this basic rate changed today, but owing to abnormal shipping conditions the steamship lines on these routes are now sending their vessels to several ports of loading and of discharge, not to mention stops en route for fuel.

The hazards of the voyage are greatly increased by these additional ports of call, but when the underwriter charges something additional to his basic rate in order to compensate for the additional risk he is too often regarded as an extortionist. It is the contention of the shipper that he himself ought not to bear this burden, as the extra ports are not of benefit to him; and the steamship company insists that its bills of lading give it the right to make additional ports without redress to the shipper. It is accordingly passed along to the underwriter to absorb this charge on the ground that he has a fixed rate in his tariff for the voyage and should be bound thereby. But the shipper forgets that there is a clause in his policy that makes it obligatory upon him to report all deviations to his underwriter and to pay additional premium therefor. If the underwriter were to waive this additional charge he would, in effect, be reducing his basic rate to the extent of the increase in the risk incurred by the deviations, and that would be nothing short of suicidal for him. As a matter of fact, these charges should not be borne by the assured, but should be included in the cost of the goods and borne by the consumer. To accomplish this the shipper should be advised at the time of engaging freight space of the ports to be used, and then obtain from his underwriter advice of the additional charge, which, in turn, should be included in his costs.

In the case of long voyages, as to the Far East, it is well known to the underwriter that it is the custom of these trades to make one port for fuel on the passage and to stop at numerous ports in the Far East for discharge and loading cargo. He has accordingly made provision for such ports in his rate and should not charge additional therefor. But it has never been the custom in the Far East trade to stop en route at Mediterranean ports for cargo and, accordingly, the underwriter's base rate does not contemplate such deviations and he is entitled to additional premium for each cargo port made in the Mediterranean. In determining the equity of additional charges on other routes similar principles should be used.

This whole question of additional charge for deviations is an annoying one both to the underwriter and the assured. There can be no doubt, however, that the risk involved in a vessel calling at a port on the passage for fuel is substantially as great as when it uses a port for cargo. The danger lies in the possibility of stranding and collision, and these risks are practically the same whether the vessel calls for fuel or to load or discharge cargo. Admittedly there is a fire hazard involved in a vessel opening her hatches at a pier, which is not always present in loading fuel, and yet those who are familiar with the fire hazards incurred in loading fuel oil will realize that even here there is ground for differences of opinion.

## Uniform State Laws

Determined efforts are under way to secure for American marine underwriters conditions here at home of competitive equality with foreigners. Who is to say that such a desire is unreasonable? And yet the most cursory examination of insurance legislation now in effect in the several states will suffice to reveal a state of affairs in this country that absolutely precludes anything like an even chance between our underwriters and their foreign rivals. The states alone have the power of regulating insurance. Marine insurance is outside of the constitutional powers of Congress, the Supreme Court having held in repeated decisions that marine insurance is an incident of, but does not constitute, commerce. There are characteristics that differentiate marine and transportation insurance from all other kinds of insurance, and there are considerations why marine insurance requires uniform state regulation separate from all kinds of insurance. Not only are these necessities lacking at the present time, but violent conflict in the requirements of state as compared with state imposes handicaps and burdens upon American marine insurers that do not exist in the case of foreign competitors and might readily be removed by uniform state action.

Inaugurating a movement for the bettering of these conditions, the American Institute of Marine Underwriters recently presented a dignified memorial to the insurance commissioners' convention in session at St. Louis, pointing out the lack of uniformity in the treatment of marine insurance by present state laws, and urging an equalization of taxation and similar readjustments to the end that equality in competitive conditions may be secured. It was presented by Benjamin Rush, Charles R. Page and A. G. Thacher, and received the warm support of Insurance Superintendent Francis R. Stoddard, Jr., of New York. It was referred to the committee on laws and legislation, and will be reported on at the commissioners' annual meeting in September.

Subsequent to the St. Louis meeting a special conference was had by the American Institute of Marine Underwriters at New York and a committee, consisting of Benjamin Rush, chairman, Charles R. Page, William H. McGee, Douglas F. Cox and Hendon Chubb, was appointed to further the work of legislative uniformity through conferences and co-operation with state insurance commissioners and allied interests. Naturally, not all the states are of equal interest to the marine underwriters; especial attention will be centered upon the maritime districts and upon the important inland exporting states, such as Illinois, Michigan, Wisconsin, etc.

## Havana Lighterage Conditions

Lighterage conditions at Havana are to be investigated and action got under way looking to the institution of some of the improvements that are so seriously needed there. The American Institute of Marine Underwriters has appointed a special committee, of which F. H. Cauty is chairman, to further the work. It is a notorious fact that a majority of the lighters in use at Havana are in a wretched condition and entirely unfit for the important services they are called upon to render. They are old and inadequate, and many of them are of a type readily to ship sea water in rough weather and to so imperil and subject to serious damage the commodities they undertake to carry. Furthermore, the Cuban governmental regulations with respect to loading are decidedly loose and are easily evaded. Damage claims to cargo at Havana are continually coming in to underwriters, and the majority of them might readily be prevented if lighterage conditions at that port were what they ought to be. The United States attache at Havana has taken much interest in the matter and is prepared to further the efforts of the underwriters in securing the much needed improvements.

## Harbor Oil Pollution

Opposition has developed to the measure recently introduced in Congress by Representative Appleby of of our harbors and rivers caused by New Jersey for ending the pollution the emptying of waste oil from vessels. It is argued that this could not be made to work out equally as applied to domestic and foreign steamers. That there is urgent necessity for immediate legislation of effectual nature to meet the serious fire hazard so developed is admitted on every side. Both fire and marine insurance men have been urging action for the past year or more. Property of almost incalculable value, on practically all of our American waterfronts, is lying subject to sweeping conflagrations easily created by the dropping of a spark into water coated or impregnated with oil. There is so much floating oil in some of the canals and basins along New York harbor as to make it worth the while to gather it for commercial purposes. Piling is, in places, coated with oil. It would be next to impossible to check a fire developed in some of our harbor waters because the surface oil would promptly carry the blaze out of reach beneath wharves and piers. A few days ago members of the committee on surveys of the New York Board of Fire Underwriters, accompanied by a number of city officials, made an extended trip by boat around New York harbor to observe present conditions in this regard, and all were of opinion that some relief measure must be provided at once for the improvement of conditions about the mouth of Gowanus Canal and at Beard's Basin, where the conflagration hazard is serious. But New York City is far from being the only delinquent. The majority of American harbors lie under the same indictment. It will probably come to the institution of receiving facilities for taking the waste oil from vessels and conveying it to a public station where it can be destroyed or consumed. Dumping it anywhere near the three-mile limit will not bring relief to the bathing beaches which, at the present time, are frequently injured by the oil being carried in upon them.

## General Average Charges

Inquiry is frequently made as to the basis of liability of cargo underwriters for general average charges in cases where the contributory value of cargo exceeds the insured value. This question has frequently been before the courts, and yet it still remains unsettled in the minds of numerous assured. In England it is held by the courts that where the contributory value of an interest exceeds the insured value the underwriter shall be liable only for such proportion of the general average expenses as the insured value of the interest bears to the contributory value. For example, if a shipment is insured for $5000 and the value for contribution in general average is fixed at $6000, the underwriter would pay but five-sixths of the general average charges. This would seem to be in keeping with the principle that a policy of marine insurance is a valued policy and that both parties shall be bound by the basis of valuation contained therein irrespective of the actual value of the insured interest. Increased values should be insured as such. But the American law, both in Federal and state courts, holds that the underwriter must pay the full general average assessment on the ground that the marine policy being a valued policy the underwriter is estopped from setting up that the value as assessed for contributory purposes is not the true value of the property insured. That is to say, the underwriter having insured a certain shipment or vessel for a specified valuation and having agreed to pay all losses which occur from specified perils, including general average charges, he must pay such losses and charges up to the insured value of the policy and cannot raise a question as to the accuracy of the policy valuation.

## Office Changes and Personals

Samuel Bird, president of Talbot, Bird & Company, is in Europe on a six weeks' pleasure trip.

Platt, Fuller & Company, as general marine agents of the National Fire of Hartford, have appointed William Wallace & Company of Boston, formerly marine agents of the Aetna, their representatives in Massachusetts.

Herbert Appleton, vice-president of Appleton & Cox, Inc., has retired after an active connection of nearly fifty years with that firm. His son, F. H. Appleton, has also severed his connection with Appleton & Cox and is to engage in the insurance brokerage business. The Appleton interests have been sold to the others who have been associated with them in the corporation, and the business is being continued under the same corporate title.

Osborn & Company, one of the best known insurance brokerage firms of New York City, has merged with the fire brokerage firm of Slosson & Smyth, and the combination is doing business under the firm name of Osborn, Slosson & Smyth. Their lake and ocean cargo business will be handled by Fred J. Conklin, formerly manager of the Overseas Agency and more recently with the Shippers Underwriting Agency.

# PACIFIC CONFERENCE RATES

As of June 9

The following rates, quoted by the conferences that govern different trades of the Pacific Coast of the United States and Canada, are published as a matter of information. They are accurate for the date given above; but, as frequent changes may occur, shippers in all cases should verify the quotations. All rates are in gold dollars, unless otherwise indicated. At the head of each table appears the standard used, whether 100 pounds or long or short tons. The following symbols are employed: W, weight, 2000 or 2240 pounds, depending upon the trade; M, measurement, 40 cubic feet; W/M weight or measurement, ship's option; BM, board measure, 1000 feet. Only the important rates are quoted. When two rates are shown thus: Lumber.......... (10)..........BM 9.00, in bold type, a change has been made since the last report. The rate in parenthesis is the old and that on the right is the new.

## Intercoastal

**Eastbound:** Atlantic Intercoastal Conference.

(100 pounds)

| | | |
|---|---|---|
| Canned goods | | .50 |
| Dried fruit | | .55 |
| **Lumber, open; about (12)** | **BM** | **13.00** |
| Flour | | .35 |
| Wool (greasy, in bags) | | 1.25 |
| Wool (greasy, comp'd bales) | | .90 |

**Westbound:** Atlantic Intercoastal Conference.

(100 pounds)

| | |
|---|---|
| Steel | .60 |
| Tinplate | .50 |
| Hardware | 3.50 |
| Dry goods | 4.00 |
| Shoes | 3.25 |
| Furniture ($20 value) | 1.80 |
| Cotton piece goods | 1.15 |

## Gulf

**Eastbound:** Pacific Coast-U. S. Gulf Eastbound Conference.

(100 pounds)

| | | |
|---|---|---|
| Shingles | | .65 |
| Canned goods | | .50 |
| Dried fruit | | .55 |
| **Lumber (18)** | **BM** | **12.00** |
| Flour | | .35 |

**Westbound:** U. S. Gulf Intercoastal Conference.

(100 pounds)

| | |
|---|---|
| Soil pipe | .50 |
| Naval stores | .75 |
| Furniture | .75- 1.25 |
| Agricultural implements | 1.25 |
| Hardware | 1.56 |

## Cuban

**Eastbound:** Pacific Coast-Cuban Eastbound Conference.

(100 pounds)

| | | |
|---|---|---|
| Beans | | .75 |
| Canned goods | | .74 |
| Cement | | .75 |
| Flour | | .75 |
| Dried fruit | | 1.00 |
| Rice | | .75 |
| Lumber | BM | 18.00 |

**Westbound:** No cargo.

## Trans-Pacific

**Westbound:** Pacific Westbound Conference; U. S. S. B. Trans-Pacific Outward Conference.

(Short tons)

| | | |
|---|---|---|
| General | W/M | 16.00 |
| Steel | W | 5.00 |
| Lumber— | | |
| Ordinary | BM | 12.50 |
| Squares | BM | 11.50-12.50 |
| Logs | BM | 17.50 |
| Flour | | open |
| Oils | W/M | 5.00 |
| Salmon | W/M | 12.00 |
| Milk | W | 6.00 |
| Copper-lead-spelter | W | 5.50 |
| Asphalt | W/M | 5.00 |
| Rice | | open |
| Malt | W | 15.00 |
| Sugar | W | 10.00 |
| Cement | W | 5.00 |
| Wheat | W | 7.00 |

**Eastbound:** U. S. S. B. Trans-Pacific Conference, Homeward Committee.

(Short tons)

| | | |
|---|---|---|
| General— | | |
| China | W/M | 15.00 |
| Japan | W/M | 10.00 |
| Manila | W/M | 12.50 |
| Rattan furniture— | | |
| Shanghai | M | 6.00 |
| Hongkong | M | 3.00 |
| Hides, dry— | | |
| Shanghai | M | 12.50 |
| Hongkong | M | 12.50 |
| Japan | M | 12.00 |
| Hides, green, Hongkong | M | 17.50 |
| Wool, Japan | M | 10.00 |
| Seeds, Japan | W | 4.00 |
| Hemp, Japan | W/M | 10.00 |
| Vegetable Oils, Japan— | | |
| Bulk | W | 7.50 |
| Gunnies | M | 8.00 |
| Unshelled walnuts | W | 13.00 |
| Shelled walnuts | W | 10.00 |

## South American, West Coast

**Southbound:** Pacific Coast-West Coast South America Conference.

(Short tons)

| | | |
|---|---|---|
| General | W/M | 18.00 |
| Lumber, prin. ports | BM | 18- 20 |
| Flour | W | 14.00 |
| Wheat | W | 15.00 |
| Asphalt | W | 11.00 |
| Cement | W | 10.50 |
| Canned goods | W/M | 15.00 |

**Northbound:** Pacific Coast-West Coast South America Conference.

(Long tons)

| | | |
|---|---|---|
| General | W/M | 10.00 |
| Nitrate | W | 6 00 |
| Ore | W | 5.50 |
| Cocoa beans (2000 lbs.) | W | 15.00 |
| H. W. logs | W/M | 15.00 |

## South American, East Coast

**Southbound:** Pacific Coast-East Coast South America Conference.

(Short tons)

| | | |
|---|---|---|
| General | W/M | 20.00 |
| Lime | W/M | 10.00 |
| Agricultural implem'ts | W/M | 10.00 |
| Canned goods | W/M | 14.00 |
| Cement | W | 6.50 |
| Steel | W | 10.00 |
| Lumber— | | |
| Pine, 100 M up | BM | 17.00 |
| Pine, less than 100 M | BM | 20.00 |
| Fir | BM | 15.00 |

**Northbound:** Pacific Coast-East Coast South America Conference.

(Long tons)

| | | |
|---|---|---|
| Fertilizer | W | 6.50- 8.00 |
| Coffee, short ton | | 15.00 |
| Hides | W | 12.00 |
| Wood extracts | W | 9.00 |

## European

**Eastbound:** Informal Conference.

(Long tons)

| | | |
|---|---|---|
| General | W/M | 20.00 |
| Canned goods, 100 lbs., strpd. | | .65 |
| Barley-wheat | | 37/6- 42/6 |
| Lumber | BM | 90/- |
| Dried fruit— | | |
| Strapped, 100 lbs. | | .80 |
| Bags, 100 lbs. | | .70 |
| Beans-peas, 100 lbs. | | .90 |
| Rice, 100 lbs. | | .60 |

**Westbound:** Rates fixed in Liverpool; fluctuating.

## Australasia

**Southbound:** Pacific Coast-Australasian Tariff Bureau.

(Short tons)

| | | |
|---|---|---|
| General | W/M | 20.00 |
| Machinery | W/M | 20.00 |
| Lumber | BM | open |
| Lubricating oil | W/M | 7.00 |
| Case oil (case) | | .35 |
| Canned goods | W/M | 15.00 |
| Steel | W | 11.00 |

**Northbound:** Pacific Coast-Australasian Tariff Bureau.

(Long tons)

| | | |
|---|---|---|
| General | | 105/- |
| Coal | W | 5.00 |
| Wool, greasy | | £1-3/8 |
| Sheep skins | | £1-1/4 |
| Sausage casings | | 160/- |

# RATES AND CHARTERS

## The Rate War

Recent peace overtures from scarred veterans of the trans-Pacific rate conflict may lead to lasting peace. A preliminary meeting of Puget Sound trans-Pacific traffic officials was to be held in Seattle June 13. This conference was expected to outline plans for the re-organization of the trans-Pacific Conference and to submit them to Columbia River and San Francisco officials for approcal, whereupon a meeting of all trans-Pacific traffic officials on the Pacific Coast would be arranged.

Practically every trans-Pacific operator is in favor of peace and San Francisco officials were delighted with the news. The Canadian Pacific, which heretofore has been an impediment to the success of a conference, now approves the creation of a formal body whose members would be placed under heavy bonds as a guarantee of good faith. As at present outlined, rules of the proposed conference will compel each member to post a cash bond of $10,000. If a member should violate any rule adopted he would forfeit this amount and would be required to post a double amount should he wish to re-enter the conference. It will be noted that this plan was first proposed by the Blue Funnel, which inclined to favor any organization that gave assurance of permanence and stability. If all other members should agree to the bond provision the Blue Funnel could be depended upon to act in accord with the Canadian Pacific, with the result that an effective organization might be looked for. The Shipping Board recently announced that it would support a conference if the cash bond feature were included. The China Mail also was an advocate of the new plan.

Those interested in the conference are advocating the selection of a general chairman from among traffic officials, to serve without pay and to have charge of the administrative affairs of the organization. As head of the conference this official would direct the work of the general secretary, who would be on salary, initiate matters of policy, and preside over general conference meetings. Local organizations would be maintained in each district, and, as heretofore, adjust rates on commodities of an exclusively local character, while the general conference would adopt general rates for all other commodities, including transcontinental shipments.

## Page Freight Report

San Francisco, June 12, 1922.

Since our last report dated May 15 there have been quite a few fixtures in the way of full cargoes for grain for June loading from Portland to the U. K. and usual Continental range, among which the following steamers are reported: Ariadne Irene by Northern Grain & Warehouse company at 37/6; Baron Polwarth by the same charterers private terms, as also the Singapore Maru at 37/6; the Vancouver Maru and the Sweden Maru by Balfour, Guthrie & Company at 37/6; the Aden Maru and one other Japanese steamer and the Ben Lawers by Kerr Gifford & Company at 37/6; two Japanese steamers by Gray Rosenbaum at 37/6, and a Japanese steamer by James Richardson & Son, Ltd., at 37/6. The Norwegian steamer Havo is also reported closed for the same business, but neither the rate nor the charterers are disclosed at this writing. The Northern Grain & Warehouse Company is also reported as having fixed the Tenpaisan Maru for wheat for September loading at 40/-. In the way of liner space fixing, not much has been done since last writing, aside from some 5000 tons of barley for the U. K. at 40/- for August, and a full cargo fixture has also been made in barley, but neither rate nor charterers have been disclosed.

Offshore fixtures in the way of lumber have been light, and nothing has been reported to us. Chas. R. McCormick & Company have taken the Munaires for lumber for New York at $12 a thousand feet. The schooner North Bend and the auxiliary sailer La Merced are both reported fixed for copra from the South Seas to San Francisco. The charter that is creating more than ordinary interest is the fixture of the steamer Nile for a period of one year on time charter on the San Francisco-Tahiti run, terms private.

Mr. Leslie Comyn, of W. T. Comyn & Company, has just returned from Washington, D. C., and reports the purchase by his firm from the U. S. Shipping Board of the following ex-German steamers: Pequot, 9000 tons; Casco, 8000 tons; Pawnee, 7500 tons; Ida, 7500 tons; Isonomia, 6100 tons; Arcadia, 6900 tons. Prices paid for these steamers, which will be brought to this coast to be operated principally in the firm's lumber business with Australia, the Orient and the West Coast of South America, have not been disclosed. The Matson Navigation Company is reported as having bought the steamers Cowee, Cowboy and Coverun from the U. S. Shipping Board, and the California-Oregon Lumber Company is reported as having bought the Cowiche from the U. S. Shipping Board; the terms of these sales have not been reported as yet. The steel ship Monongahela of about 4000 tons deadweight is reported as having been purchased by Atkins, Kroll & Company at a price of $13,100.

PAGE BROTHERS, Brokers.

## Beyfuss Freight Report

San Francisco, June 12, 1922.

Our previous report was dated four weeks ago, since when the only real active market has been:

Grain to Europe: A large number of steamers have been fixed with wheat to U. K. or Continent at 37/6, and although the month started with quite an active demand for grain this has slackened up considerably now on account of the poor buying market in Europe. Rates are holding fairly firm, especially as there is practically no June space in the liners and very little July space, and rates are nominally 38/9 to 40/-. Two steamers have been reported fixed for new crop barley, the latest having been done at about 37/-. Liner space for barley is about the same as we reported above for wheat, except that rates are a little bit stronger and are nominally 38/9 to 40/-.

Lumber to the Orient: In this trade there has been practically no inquiry, but we should say that rates are somewhat stronger, as there is less "distress" freight and most of the quotations that have been made are on a basis of $10 a thousand.

The lumber market to the West Coast of South America shows no change and the liner rate is still quotable at $18 and no transactions for full cargoes have been consummated.

The same situation applies to Australia in that this lumber market is inactive and rates are quotable at about $14 on regular liners and also with no transactions reported for full cargoes.

South Africa again took two of our large sailing vessels for full cargoes of lumber, but rates remain the same, being $22.50 per thousand.

Another cargo of Cuban sugar is loading this month for British Columbia, the rate being reported as $6.50 per ton.

C. BEYFUSS CO., Brokers.

# SHIP REPAIR FACILITIES OF PANAMA CANAL

THE Panama Canal, as the waterway through which a great portion of American shipping passes and situated in a part of the world where first-class repair facilities are exceedingly few, has installed unusually complete docking and repairing equipment. The following is descriptive of the principal docks and shops.

There is a drydock, with repair shops alongside, at each end of the canal. The two are supplementary, as ships transiting the canal for the sole purpose of reaching the drydock at Balboa for repairs are exempt from the payment of tolls.

The drydock at Balboa is the larger. Its dimensions are: usable length, 1000 feet; width at bottom, 110 feet; depth of water over keel blocks at high tide, 45 feet. The drydock at Cristobal is 300 feet long, 49.95 feet wide at the entrance, and the depth over the blocks is 13.39 feet at mean tide, or about 13 feet 9 inches at high tide.

The limit of the size of ship that can be handled is shown by the dimensions of the drydocks. There is no ship afloat in the world today that could not be handled in the 1000-foot dock at Balboa. First-line battleships of the present navy and merchant ships of 20,000 tons have been docked with complete success, and the repair facilities in the shops are adequate to meet practically any class of work.

The personnel in charge of the manufacturing and repair work at the two shops and drydocks in November, 1921, was as follows: at Balboa, 370 white Americans and 660 alien employes, principally West Indian negroes; at Cristobal, 150 Americans and 350 alien employes.

The shops at Balboa with the drydock on one side and repair wharf on the other cover an area of approximately sixty acres. The repair wharf is of steel and concrete, 60 feet wide and 2663 feet long with a depth of water alongside at mean sea level of from 38 to 44 feet. On the shore side the shops are connected by tracks with the main system of the Panama Railroad. There are 44 buildings of steel and concrete construction in the shop reservation. These include a general office building, a machine, erecting and tool shop, forge shop, boiler and ship fitters' shop, steel storage shed, general storehouse, paint shop, car shop, planing mill, electrical and instrument repair shop, lumber and equipment shed, pattern storage building, foundry, coke shed, boiler house, roundhouse, paint house, sand house, compressor plant and pump well, oil houses, restaurant and lavatories. Ample track and crane services provide for handling work between shops and ships. The main metal working shops (machine, forge and boiler shop) are provided with 60-ton overhead traveling cranes, while the foundry has a 25-ton overhead crane. All of the shops are equipped with as complete a line of electrically-driven power tools as is generally found in a modern repair plant. Only the larger tools are here specially mentioned to give an idea of the maximum capacity of each department.

The machine shop is provided with a vertical boring mill capable of working 18 feet in diameter, an open-side extension planer 16 feet by 32 feet, and a lathe with a 120-inch swing by 65 feet between centers.

The forge shop is provided with a 500-ton forging press with the necessary furnaces to handle any work that the press is capable of.

The boiler and shipfitting shops have a set of rolls capable of bending plates ¾ inch by 30 feet, 1 inch by 24 feet, or 2 inches by 6 feet.

The pipe shop cares for plumbing and for pipe, copper and sheet metal work of the highest classes.

The foundry is equipped with a 2-ton tropenas converter, a 2-ton and a 1-ton cupola, and the usual brass furnaces. It can turn out castings as follows: bronze, brass or composition, ¼ pound to 1000 pounds; iron, ¼ pound to 26,000 pounds; steel, ¼ pound to 10,000 pounds.

The planing mill and joiner shop is outfitted with the usual woodworking machines, including a sawmill capable of handling timbers used in ship work.

The oxy-acetylene plant has portable electric-welding and oxy-acetylene cutting outfits for such repairs. The plant develops approximately 400 cubic feet of acetylene an hour, 5000 cubic feet of oxygen a day, and 10,000 cubic feet of hydrogen a day.

An electrical repair shop is the center of operations for electrical work done on the ships.

Chronometers and other instruments of precision are adjusted or repaired in the instrument repair shop.

The storehouses carry on hand a large stock of steel shapes, pipe, ship fittings and supplies of every description. Steel plate is carried in stock in all thicknesses up to and including two inches. The largest plates in stock are 72 inches by 10 feet by 2 inches. A large amount of steel billets is kept on hand up to and including 24 inches by 24 inches by 19 feet. Structural shapes are carried as follows: I-beams of all sizes up to 27 inches; channels, all sizes up to 12 inches; and angles, all sizes up to 8 inches by 8 inches by ¾ inch. The lumber storehouse carries a full supply of lumber used in all classes of car and ship work, including native hardwoods.

The Cristobal shops have less capacity than the shops at Balboa and are intended for repairs of less extent. For emergency and rush work there is a small plant on the mole adjacent to the cargo piers. Adjoining the graving dock there are three buildings, one of which includes the machine shop, smithy, pipe shop and power plant, another the boiler and shipfitters' shop, and the third, the woodworking shop. The tools are of less modern type and of smaller capacity than those in use at Balboa. The final equipment of this plant has been postponed until it can be determined what the demands upon it will be. In the meantime it can handle routine repairs; and in emergencies parts that require larger tools than are available at Cristobal are shipped by railroad to Balboa to be machined.

The shops of the Panama Canal perform practically all classes of ship repairs and construction, and are constantly engaged on such work. Among the more important jobs handled up to the end of 1921 may be reckoned the overhaul of five former German steamers taken to Balboa from Peru, where they had deteriorated during internment and had suffered material damage at the hands of their crews; the reconditioning of the steamship Cristobal, a ship of 9332 gross tons, with change from coal to oil burning, extension of passenger accommodations, and general overhaul of hull and machinery; and the rebuilding of the steamship Marne after she had been completely wrecked by fire and explosion and sunk by gunfire. During the year ending June 30, 1921, the total number of vessels to which repairs were made, including tugs, barges and dredges, was 252 at Balboa and 419 at Cristobal.

# AMERICAN SHIPBUILDING

## Work in Prospect

A general description of two sister ships planned by the Oceanic Steamship Company for its Australasian service will be found on pages 397 and 398. Construction of the vessels, however, is contingent on two or three conditions and, therefore, remains rather indefinite.

According to report, the Central Steamship & Commerce Company is backing a movement to put a fleet of seventeen motorships on the New York State barge canal for operation on that canal and on the Great Lakes in summer and in the coastwise and foreign service in winter. It is said by the promoters that such carriers could operate on half loads and still cut the railroad rates in half. The ships planned would be 257 feet long, 42 feet beam, and 18 feet depth, to cost approximately $5,000,000 for all.

Bids are being asked for by the board of commissioners of the port of New Orleans on a steel screw fireboat 138 feet long, 29 feet beam, and 15 feet 6 inches deep, to be fitted with compound engines and four turbine-driven pumps of a combined capacity of 10,000 tons a minute at a pressure of 200 pounds a square inch at the pumps. The boat will also have a complete equipment of modern fire-fighting appliances.

The Canal & River Transportation Company of New York is having prepared plans for five diesel-electric cargo boats for operation in barge canal service. Each of the vessels will be 160 feet long, with a draft of 7½ feet, a cargo capacity of 55 tons, and engines capable of developing 150 horsepower.

## American Building

According to the report of the American Bureau of Shipping, as of May 1, seagoing steel tonnage building and contracted for in the United States stood as follows: 5 cargo carriers (2 for Great Lakes), 33,085 gross tons; 6 passenger and cargo vessels (1 for U. S. S. B., 10,500), 29,920 gross tons; 1 passenger vessel, 350 gross tons; 7 tankers (includes 2 combination coal and ore and 2 combination oil and ore carriers), 76,600 gross tons; totals, 19 vessels of 139,955 gross tons.

River and harbor steel tonnage building and contracted for by private owners amounted to 81 vessels of 33,825 gross tons.

## Recent Contracts

**American Shipbuilding Company,** Cleveland, 13,000-ton bulk freighter for Herbert K. Oakes for operation by the Franklin Steamship Company; 604 feet over all, 584 feet between perpendiculars, 64 feet beam, 33 feet depth; estimated delivery spring, 1923, probably from the Lorain, Ohio, yard. The company was awarded the contract on its bid of $800,000.

**Toledo Shipbuilding Company,** Toledo, 12,000-ton vessel for the Kinsman Transit Company, Cleveland; delivery estimated for next spring.

**G. F. Matthews,** Portland, Oregon, steam schooner for S. S. Freeman & Company of San Francisco; 215 feet long on the water line and 225 feet over all, beam 43.6 feet, depth of hold 15.6 feet, 750 horsepower triple expansion engine, two Babcock & Wilcox boilers, lumber carrying capacity 1,300,000 feet. Mr. Matthews last year took over the plant of the Peninsula Shipbuilding Company.

**Staten Island Shipbuilding Company,** Staten Island, New York, three river shafts for Hudson River vehicular tunnel, one for New York side and Nos. 1 and 2 for the New Jersey side; estimated keel-layings August.

**Hooven, Owens, Rentschler Company,** Hamilton, Ohio, two 4-cylinder triple expansion 2700-horsepower engines for the combination steamers building at the yard of the Federal Shipbuilding Company, Kearny, New Jersey, for the Merchants & Miners Transportation Company.

## Keel-layings

Ferryboat, James Rolph & Company, Bethlehem Shipbuilding Corporation, Alameda Works, Union Plant, San Francisco, May 12.

Light vessel 106, U. S. Department of Commerce, Bath Iron Works, Ltd., Bath, Maine, April 12; also light vessel 107, April 14.

Yacht, Keith Spalding, Bethlehem Shipbuilding Corporation, Harlan Plant, Wilmington, Delaware, May 27.

Bulk freighter, Wilson Transit Company, Cleveland, Great Lakes Engineering Works, River Rouge, Michigan, May 3.

Passenger vessel, Inter-Island Steam Navigation Company, Honolulu, Sun Shipbuilding Company, Chester, Pennsylvania, May 16.

## Launchings

Ferryboat, Captain J. C. Dahmer, DeFoe Boat & Motor Works, Bay City, Michigan, May 20.

American Girl, freight vessel H. E. Searfoss, DeFoe Boat & Motor Works, Bay City, Michigan, May 28.

Delivery No. 6, motor barge Standard Oil Company, New York, Staten Island Shipbuilding Company, Staten Island, New York, May 18.

Automobile ferryboat, Golden Gate Ferry Company, James Robertson Shipyard, May 11.

## Deliveries

S-31, submarine U. S. Navy, Bethlehem Shipbuilding Coropration, Ltd., Potrero Works, Union Plant, San Francisco, May 11; S-33, April 17.

S-18, Submarine U. S. Navy, Bethlehem Shipbuilding Corporation, Ltd., Fore River Plant, Quincy, Massachusetts, May 17; S-23, May 3.

Western World, combination vessel U. S. Shipping Board, Bethlehem Shipbuilding Corporation, Ltd., Sparrows Point Plant, Sparrows Point, Maryland, May 9.

Ferryboat, Captain J. C. Dahmer, DeFoe Boat & Motor Works, Bay City, Michigan, May 25.

Mirimar, steel houseboat Mr. Eisenlohr, Kyle & Purdy, Inc., City Island, New York, May 12.

S-50, submarine U. S. Navy, Lake Torpedo Boat Company, Bridgeport, Connecticut, May 20; commissioned at Bridgeport.

Dolphin, diesel yacht Cox & Stevens, Newport News Shipbuilding & Drydock Company, Newport News, Virginia, June 2.

Carfloat, Brooklyn Eastern District Terminal, New York Shipbuilding Corporation, Camden, New Jersey, May 26.

Delivery No. 6, motor barge Standard Oil Company, New York, Staten Island Shipbuilding Company, Staten Island, New York, May 31.

Aven J. Hanford, diesel electric automobile ferryboat Golden Gate Ferry Company, James Robertson Shipyard, Alameda, California, May 27.

## News of the Yards

Word comes from Aberdeen, Washington, that the site of the former Grant Smith-Porter shipyard on the Wishkah River has been purchased from the United States Shipping Board by R. W. and A. G. Sutcliffe. All movable property, such as lumber, doors, iron, plumbing supplies, etc., is to be offered to home-builders at reasonable prices, and then it is planned to establish small factories in the twelve buildings already on the site. All are equipped with machinery, electric lighting and power and other industrial essentials, and plans are now under consideration for a ladder factory and for a box factory.

* * *

Precedence of claimants to the assets of the defunct Norway-Pacific Construction & Drydock Company at Everett, Washington, has been settled by an order signed May 20 by Judge J. T. Ronald of the Superior Court. Priority is given to the unpaid portion of the 1919 personal property tax, $612.72. Next comes the tax for 1920, $6568.20, of which $2952 must be withheld by the receiver until the settlement of the controversy between the receiver and the Southwark Foundry & Machine Company as to title to part of the machinery. If the company wins, it will receive the $2952; otherwise it will be applied on the 1920 taxes. Then come receiver's fees; allowance for receiver's attorneys; $6000 to the state supervisor of banking; $2817 rental claims of Great Northern Railway Company; $4062.50 to banking supervisor; 1921 tax of $5527, less $2464.20 to be held as the $2952 mentioned above; Great Northern Railway Company, $3443; receiver's certificates, about $25,000. A hospital, timekeeper's office and administration building erected on Great Northern property are declared to belong to the receiver, and he is ordered to remove and sell them. No taxes may be levied or collected on the machinery in dispute.

* * *

In conformity with the terms of an agreement recently concluded with the Japanese government by Charles Beecher Warren, American ambassador to Japan, load-line certificates of American ships issued by the American Bureau of Shipping will be accepted and recognized by the Japanese government.

* * *

A petition was filed in San Francisco June 5 on behalf of the Moore Shipbuilding Company, Oakland, California, with claims aggregating $3181; the Marshall-Newell Supply Company, $3647; and L. A. Rosener, expert engineer, $6368, both of San Francisco, seeking to have the Hanlon Drydock & Shipbuilding Company of Oakland declared bankrupt The allegation is made that an act of bankruptcy was committed by the Hanlon Company April 25, 1922, when with intent of giving preference it turned over to Smith, Rice & Company, an unsecured creditor, property valued at $2298.

* * *

Owing to the depression in Japanese shipping circles, the Department of Communications recently decided to advocate a shipbuilding program, the expenditure to approximate yen 250,000,000. Consideration by the Department of Finance is necessary before the decision is made final. Under the plan formulated, steamship companies may place orders with Japanese shipyards for the construction of ships to the amount of 150,000 tons a year, the whole work to be completed in five years. The government will grant to the steamship companies the necessary funds for this construction, the money to be repaid in twenty years with interest at a low rate. The government may also grant to these steamship companies a subsidy to cover any losses incurred by them in the operation of these vessels.

* * *

Ships under construction in Japanese shipyards May 1 numbered 53, with an aggregate tonnage of 127,042. There were 58 ships upon order, with a total tonnage of 296,042. Six ships, aggregating 17,297 tons, were launched during March, while five ships of 773 tons were completed during the same month.

* * *

In three years Japan's shipbuilding has decreased from 700,000 tons with 100,000 workmen employed to 140,000 tons and 65,000 workmen. In this connection the Asano Shipbuilding Company dismissed at the end of April 1000 of the 3000 workmen usually employed at its Tsurumi yard because of inability to retain the entire number, but shortly after reinstated 260. There are now at that plant two large vessels that will be finished in December, according to present indications.

* * *

An account showing first distribution was recently filed by the referee in the matter of the bankruptcy of the Globe Shipbuilding & Drydock Company of Maryland. The dividend was at the rate of 10 per cent on claims of general creditors duly filed and allowed, payment to be made by the trustees after May 30.

* * *

The Hooven, Owens, Rentschler Company, Hamilton, Ohio, is completing two 2500 horsepower engines that will be used to replace the engines now in the tankers L. J. Drake and Montrolite, owned and operated by the Standard Oil Company of New Jersey.

* * *

The Nippon Yusen Kaisha is planning to inaugurate a new passenger service between Nagasaki and Shanghai about the beginning of 1923. The two vessels that are to be put on the run are now being outfitted in Glasgow. Owing to the strike in the shipyards there, work on these ships has been delayed, and it is estimated that they will not reach Japan until October or November. The vessels, which are to be named the Nagasaki Maru and the Shanghai Maru, are sisters, with a gross tonnage of 5500 and a speed of 18½ knots. It is stated that they will make the trip between the two cities in 24 hours as against the present time of nearly 48 hours.

# Building and Repairs

## Atlantic, Lakes, Rivers

### AMERICAN BRIDGE COMPANY, PITTSBURGH, PENN.

Purchasing Agent: W. G. A. Millar.

Fifteen decked barges, 120 LBP; 30 beam; 7 deep, US Engineers, Memphis, Tenn.; 7 launched, 6 delivered.

Twelve sand barges, J. K. Davison & Bro., Pittsburgh, 135 x 26 x 10; 12 launched; 8 delivered.

Two sand barges, H. H. Halliday Sand Co., Cairo, Ill.; 130x30x7-6; launched and delivered.

One dredge hull, H. H. Halliday Sand Co, Cairo, Ill; 110 x 30 x 5-6; launch June/22, est.

Two oil barges, Gulf Refining Co; 158x36x11; launched and delivered.

Four decked barges, undisclosed interests, 180x36x8; launch July/22, est.

One wharfboat, undisclosed interests, 160x26x5; launch July/22, est.

Two carfloats, Long Island R R Co, 292x42x11-6; launch Sept/22, est.

### AMERICAN SHIPBUILDING COMPANY, LORAIN, OHIO

Purchasing Agent: W. H. Gerhauser.

No name, hull 781, bulk freighter H. K. Oakes Company; 596 LBP; 64 beam; 21 loaded draft; 12 mi loaded speed; 13,000 DWT; TE engs, 2400 IHP; 3 Scotch boilers, 14x11, 185 WP; keel July/22, est; launch Oct/22, est; deliver Nov/22, est.

No name, hull 782, bulk freighter Pittsburgh Steamship Co; 580 LBP; 60 beam; 21 loaded draft; 12 mi loaded speed; 12,500 DWT; TE engs, 2300 IHP; 3 Scotch boilers, 13-6x11, 185 WP; keel July/22, est; launch Oct/22, est; deliver Nov/22,est.

No name, hull 783, bulk freighter Pittsburgh Steamship Co; sister to above; keel Dec/22, est; launch Mar/23, est; deliver May/23, est.

No name, hull 784, bulk freighter G A Tomlinson Co; sister to above; keel Dec/22, est; launch Mar/23, est; deliver May/23, est.

### BATH IRON WORKS, LTD., BATH, MAINE

Purchasing Agent: John L. P. Burke.

Light vessel 106, hull 87, second-class light vessel US Dept of Commerce, 109-6 LBP, 30 beam, 14-4 loaded draft, 9½ speed; comp eng, 400 IHP; 2 Scotch boilers, 10-6 x 11-4; keel Apr12/22; launch Oct/22, est; deliver Dec/22, est.

Light vessel 107, hull 88, sister to above; keel Apr14/22; launch Nov/22,est; deliver Jan/23, est.

Light vessel 108, hull 89, sister to above; keel June1/22, est; launch Jan/23, est; deliver Mar/23, est.

Light vessel 109, hull 90; sister to above; keel July1/22, est; launch Mar/23, est; deliver Apr/23, est.

Light vessel 110, hull 91, sister to above; keel Aug1/22, est; launch May/23, est; deliver June/23, est.

### BETHLEHEM SHIPBUILD'G CORPORATION, BALTIMORE DRYDOCK PLANT, BALTIMORE

Fort McHenry, hull 125, tanker builder's account; 340 LBP; 49 beam; 23-6 loaded draft; 10½ loaded speed; 6050 DWT; rec eng, 2000 I HP; 2 Scotch boilers, 15-6; keel Nov24/20; launch Feb1/22.

Hull 129, carfloat Lehigh Valley R. R.; 270 LBP; 38 beam; 10-6 loaded draft; keel Apr26/22.

Hull 130, carfloat Lehigh Valley R. R.; 325 LBP; 38 beam; 10-6 loaded draft; keel Apr26/22.

Hull 131, carfloat Lehigh Valley R. R.; 180 LBP; 36 beam; 9 loaded draft.

### BETHLEHEM SHIPBUILDING CORP., FORE RIVER PLANT, QUINCY, MASS.

Lexington, hull 1300, battle-cruiser U S N.

Raleigh, hull 1382, scout cruiser U S N.

Detroit, hull 1383, scout cruiser U S N.

Massachusetts, hull 1400, battleship USN.

S-18, hull 1310, submarine U. S. N., **delivered May17/22.**

S-19, hull 1309, submarine U. S. N.

S-21, hull 1312, submarine U. S. N.

S-23, hull 1314, submarine U. S. N., **delivered May3/22.**

S-24, hull 1315, submarine U. S. N.

S-25, hull 1316, submarine U. S. N.

S-26, hull 1317, submarine U. S. N.

S-27, hull 1318, submarine U. S. N.

S-28, hull 1319, submarine U. S. N.

S-29, hull 1320, submarine U. S. N.

S-42, hull 1389, submarine U. S. N.

S-43, hull 1390, submarine U. S. N.

S-44, hull 1391, submarine U. S. N.

S-45, hull 1392, submarine U. S. N.

S-46, hull 1393, submarine U. S. N.

S-47, hull 1394, submarine U. S. N.

### BETHLEHEM SHIPBUILDING CORP., HARLAN PLANT, WILMINGTON, DEL.

Hull 3478, yacht Keith Spalding; 160 LBP; 30 beam; 15-3 deep; 360 DWT; two 6 cyl 180 HP Nelseco diesel engs.

### BETHLEHEM SHIPBLDG. CORP., SPARROWS POINT PLANT, SPARROWS POINT, MD.

Western World, hull 4197, combination USSB; 518 LBP; 72 beam; 30-7 loaded draft; 16 loaded speed; turb eng, 10,000 IHP; 8 Yarrows boilers; keel July29/20; launch Sept 17/21; **deliver May9/22.**

Marore, hull 4212, ore and oil Ore SS Co; 550 LBP; 72 beam; 32-4 loaded draft; 11½ loaded speed; 20,000 DWT; turb eng, 4600 IHP; 3 Scotch boilers, 17-6x12; keel May 2/21; launch Apr1/22.

Steelore, hull 4213, ore and oil Ore SS Co; sister to above; keel July 20/21.

### CONSOLIDATED SHIPBUILDING CORPORATION, MORRIS HEIGHTS, N. Y.

Purchasing Agent: Bruce Scrimgeour.

Steel motor houseboat for John Ringling; 125 LOA; 21 beam; 4 draft; 12 speed; two 6-cyl 180 HP Nelseco diesel engs; **keel Mar22/22;** deliver July5/22, est.

### WILLIAM CRAMP & SONS SHIP & ENGINE BUILDING CO., PHILADELPHIA

Purchasing Agent: Ed. C. Geehr.

Richmond, hull 448, scout cruiser U. S. N.; keel Feb16/20; launch Sept 29/21; 88.8 per cent comp June 1/22.

Concord, hull 449, scout cruiser USN; keel Mar29/20; launch Dec 15/21; 84.5 per cent comp June 1/22.

Trenton, hull 501, scout cruiser USN; keel Aug18/20; 58 per cent comp June 1/22.

Marblehead, hull 502, scout cruiser USN; keel Aug4/20; 47.2 per cent comp June 1/22.

Memphis, hull 503, scout cruiser USN; keel Oct14/20; 42.4 per cent comp June 1/22.

Installing Diesel engines in M.S. Missourian.

### DEFOE BOAT & MOTOR WORKS, BAY CITY, MICH.

Hull 59, ferry Captain J. C. Dahmer; 65 LBP; 20 beam; 5 draft; 11 loaded speed; Fairbanks-Morse heavy-oil eng; keel Mar15/22; **launch May20/22; deliver May25/22.**

No name, hull 60, yacht Thos. H. Gill; 98 LBP; 15 beam, 6 draft; 14 speed; Standard Gas eng.

No name, hull 61, yacht builder's account; sister to above.

American Girl, hull 62, frt vessel H. E. Searfoss; 65 LBP; 14 beam; 6 draft; 10 speed; Kahlenberg heavy oil eng; keel Mar20/22; **launch May 28/22.**

No name, hull 63, wood yacht K. M. Devos; 65 LBP; 12½ beam; 4 draft; 22 speed; gas eng; keel Mar 10/22; launch June25/22, est; deliver July1/22, est.

No name, hull 64, wood yacht J. H. Reid; 42 LBP; 11 beam, 3½ draft; 11 speed; gas eng; keel Mar 30/22; launch June15/22, est; deliver July1/22, est.

No name, hull 65, steel derrick lighter, Gillespie Contracting Co of N Y; 82 long; 32 beam; 8 deep.

### FEDERAL SHIPBUILDING CO., KEARNY, N. J.

Purchasing Agent: J. L. Hastings.

Hull 68, freighter undisclosed interests; 425 LBP; 56 beam; 27 loaded draft; 11½ loaded speed; 10,025 DWT; Parsons turbines, 3100 SHP; 3 Scotch boilers, 15-3x11-3¾; keel Mar16/22; launch Aug1/22, est; deliver Sept1/22, est.

No name, hull 72, coastwise passgr and frt Merchants & Miners Transportation Co; 350 LBP; 52 beam; 19 loaded draft; 12 loaded speed; TE engs, 2700 IHP; 4 SE Scotch boilers, 14-3x11; keel July15/22, est; launch Nov15/22, est; deliver Jan15/23, est.

No name, hull 73, coastwise passgr and frt Merchants & Miners Transportation Co; sister to above; keel Aug15/22, est; launch Dec15/22, est; deliver Feb15/23, est.

### FRASER, BRACE, LIMITED, THREE RIVERS, QUEBEC

Lake freighter George Hall Coal Company of Canada; 250 LBP; 43 beam; 20-6 deep; 12 loaded speed; TE eng, 19x32x56-36 stroke; 2 Scotch marine boilers, 14-7x10-8, coal burning.

Sister to above.

Sister to above.

Sister to above.

### GREAT LAKES ENGINEERING WORKS, RIVER ROUGE, MICHIGAN

Purchasing Agent: H. O. Kretlow.

No name, hull 242, bulk freight Wilson Transit Co, Cleveland; 580 LBP; 60 beam; 20 loaded draft; 11½ miles loaded speed; 11,800 gross, TE engs, 1880 IHP; 3 Scotch boilers, 13-6; **keel May3/22;** launch Aug1/22, est; deliver Sept1/22, est.

### J. C. JOHNSON, PORT BLAKELEY, WN.

Wooden scow, builder's account, 110x36x11; deliver July15/22, est.

### KYLE & PURDY, INC., CITY ISLAND, NEW YORK CITY

Purchasing Agent: T. A. Kyle.

No name, hull 154, steel ferryboat department of plants and structures, City of New York; 90 LBP; 30 beam; 6-8 loaded draft; 10 miles loaded speed; 100 DWT· comb eng, 200 I HP; Roberts tube boilers.

Mirimar, hull 155, steel houseboat Mr. Eisenlohr; 101 LBP; 21 beam; 4-6 loaded draft; 12 miles loaded speed; 105 DWT; two 4-cyl 120 HP Nelseco diesel engs; keel Sept/21; launch May1/22; **deliver May12/22.**

### LAKE TORPEDO BOAT CO., BRIDGEPORT, CONN.

Purchasing Agent: C. D. Maxfield.

S-48, hull 48, submarine U S N; launch Feb26/21.

S-49, hull 49, submarine U S N; launch Apr23/21.

S-50, hull 50, submarine U S N; launch June18/21; **delivered to Navy**

**Dept and commissioned at Bridgeport May20/22.**

S-51, hull 51, submarine U S N; launch Aug20/21.

### MERCHANT SHIPBUILDING CORPORATION, CHESTER, PENN.

Vice-President: J. L. Ackerson.

Missourian, hull 386, freighter American-Hawaiian SS Co; 445 LBP; 59-8 beam; 28-6 loaded draft; 11½ speed; 11,000 DWT; 2 6cyl, 4-cycle Diesel engs, 4500 metric; 1 vertical donkey, 400 sq ft HS; keel Feb10/21; launch Dec14/21; at Cramp yard for installation of diesel engines.

### NAVY YARD, BOSTON

Whitney, destroyer tender No. 4 USN; 460 LBP; 60-10⅛ molded beam; 21-0½ normal draft; 16 loaded speed; 10,600 normal disp; geared Parsons turbs, 7000 SHP; 2 WT exp boilers; keel Apr 23/21; launching indefinite.

### NAVY YARD, PHILADELPHIA

Dobbin, hull 7, destroyer tender USN; 460 LBP; 60-10 beam; 21 loaded draft; 16 loaded speed; 10,600 tons disp; Parsons geared turb single screw engs, 7000 SHP; 2 WT boilers; keel Dec23/19; launch May 5/21; deliver date not determined.

Constitution, hull 8, battle cruiser USN; 850 LBP; 105-4 beam; 30-11½ loaded draft; 33½ loaded speed; 43,500 disp; electric drive, 180,000SHP; 16 WT boilers; keel Sept25/20.

United States, hull 9, battle cruiser USN; 850 LBP; 105-4 beam; 30-11½ loaded draft; 33½ loaded speed; 43,500 disp; electric drive, 180,000 SHP; 16 WT boilers; keel Sept25/20.

### NEWPORT NEWS SHIPBUILDING & DRYDOCK COMPANY, NEWPORT NEWS

Purchasing Agent: James Plummer, 233 Broadway, New York City.

West Virginia, hull 211, battleship USN; 600 LBP; 97-3½ beam; 30-6 mean draft; 32,600 normal disp; 21 speed; GE turbo-elec drive, 28,900 SHP; 8 B&W WT boilers, oil, 41,768 sq ft plus 4168 superheat; keel Apr 12/20; launch Nov19/21.

Constellation, hull 215, battlecruiser U S N; 850 LBP; 101-8¼ beam; 31 mean draft; 43,500 normal disp; 33¼ speed, est; Westinghouse turbo-elec drive, 180,000 SHP; 16 WT boilers, oil, 198,000 sq ft plus 18,000 superheat; keel Aug18/20.

Ranger, hull 215, battle-cruiser U SN; sister to above; keel June23/21.

Iowa, hull 258, battleship USN; 660 LBP; 105 beam; 33 mean draft; 43,200 normal disp; 23 speed; GE turbo-elec drive, 60,000 S H P; 12 White-Forster WT boilers, oil, 82,800 sq ft plus 8940 superheat; keel May17/20.

Dolphin, hull 263, Diesel yacht Cox & Stevens; 180-6 LOA; 24 beam; 14 deep; keel Feb27/22; launch Apr 8/22; deliver June2/22.

### NEW YORK SHIPBUILDING CORPORATION, CAMDEN, N. J.

Purchasing Agent: L. G. Buckwalter.

Eurana, hull 264, bulk oil stock; 419-3 LBP; 56-3 beam; 25-9¼ loaded draft; 10¾ loaded speed; 9870 DWT; 3 cyl TE engs, 3000 SHP; 3 SE Scotch boilers, 15-10x11-4; keel Jan17/21; launch July16/21.

No name, hull 265, bulk oil stock; sister to above.

Saratoga, hull 199, battle cruiser USN; 874 LOA; 850 LBP; 105-5¼ extreme beam; 31 mean draft; 43,500 normal disp; 33¼ loaded speed; GE turbo-electric drive; 180,000 SH P; 16 WT boilers, 198,000 sq ft plus 18,000 superheat; keel Sept25/20.

Colorado, hull 200, battleship US N; 624 LOA; 600 LBP; 97-3½ beam waterline; 30-6 mean draft; 32,600 normal disp; 21 loaded speed; Westinghouse turbo-electric drive, 28,900 SHP; 8 B&W WT boilers, 41,678 sq ft plus 4169 superheat; keel Mar29/19; launch Mar22/21.

Washington, hull 201, battleship USN, sister to above; keel June30/19; launch Sept1/21.

Kamoi, hull 267, fuel ship Japanese Navy; 497-8 LOA; 67 beam; 28 designed draft; 15 loaded speed; 13,000 DWT; elec drive, 8000 SHP; 4WT boilers; keel Sept14/21.

Hull 268, carfloat Brooklyn Eastern District Terminal; 340 long; keel Apr10/22; **deliver** May26/22.

Hull 269, carfloat Brooklyn Eastern District Terminal; 340 feet long; keel May4/22.

Hulls 270-274, inc, barges Rockland & Rockport Lime Corporation; length 196-10; keels not laid.

### PORT ARTHUR SHIPBUILDING CO., PORT ARTHUR, ONT.

Purchasing Agent: W. E. Decker.

Hull 47, single-deck bulk freighter Mathews Steamship Co; 530 LBP; 58 beam; 12 loaded speed; 10,000 DWT; 3-cyl TE engs, 25½-41-67x42, 2100 IHP; 3 Scotch boilers, 13-6; keel May10/22.

### THE PUSEY & JONES COMPANY, WILMINGTON, DELAWARE

Purchasing Agent: Jas. Bradford.

No name, hull 1020, combination steamer, sound type, Seaboard Bay Line; 320 LBP; 44 beam at waterline; 14-6 loaded draft; 18 loaded speed; 800 DWT; 4-cyl TE engs, 3000 IHP; 4 Scotch boilers, 13-3x 11-6; keel Feb23/22; launch July 7/22, est; deliver Oct/22, est.

No name, hull 1021, combination steamer, sound type, Seaboard Bay Line; sister to above; keel Feb23/22; launch Aug7/22, est; deliver Nov/22,est.

### STATEN ISLAND SHIPBUILDING COMPANY, STATEN ISLAND, NEW YORK

Purchasing Agent: R. C. Miller.

Delivery No. 6, hull 739, motor barge Standard Oil Co, N Y; 120 LBP; 25 beam; 11-9 loaded draft; 8 loaded speed; 200 gross tons; Bolinder eng, 300 IHP; keel Feb20/22; **launch May18/22; deliver May31/22.**

No name, hull 740, ferryboat Erie R R Co; 206 LBP; 44-1 beam; 17-4 loaded draft; 1538 gross; rec engs, 1200 IHP; 2 Scotch boilers, 12-9x 12-9; keel Aug/22, est.

No name, hull 741, ferryboat City of New York; 215 LBP; 45 beam; 18 loaded draft; elec drive, 1900 IHP; 4 B&W WT boilers, 8000 sq ft HS; keel Aug/22, est.

No name, hull 742, ferryboat City of New York; sister to above; keel Aug/22, est.

No name, hull 743, ferryboat City of New York; sister to above; keel Aug/22, est.

Hull 744, Hudson River vehicular tunnel, erection, launching and delivery of river shaft, New York side; keel Aug/22, est.

Hull 745, Hudson River vehicular tunnel, erection, launching and delivery of river shaft No. 1, New Jersey side; keel Aug/22, est.

Hull 746, Hudson River vehicular tunnel, erection, launching and delivery of river shaft No. 2, New Jersey side; keel Aug/22, est.

### SUN SHIPBUILDING COMPANY, CHESTER, PENN.

Purchasing Agent: H. W. Scott.

Agwiscot, hull 42, tanker A. G. W. I. S. Co; 480 LBP; 65-9 beam; 26-7 loaded draft; 12 loaded speed; 12,500 DWT; single screw QE engs, 4300 IHP; 4 SE Scotch boilers, 15-10 x11-11¼; keel Dec23/20.

No name, hull 49, ferryboat Pennsylvania Railroad; 167 long; 55 beam; 14-8 deep; two screws; 3-cyl comp engs, 700 IHP; 2 B&W WT boilers; keel Feb16/22.

No name, hull 50, ferryboat Pennsylvania Railroad; sister to above; keel Feb20/22.

Passenger vessel Inter - Island Steam Navigation Co., Honolulu; 345 long; 46 beam; 32 deep; 16½ speed; 4-cyl TE engs, 5000 IHP; 4 B&W WT boilers; to carry 434 passengers; keel May16/22.

### THE TOLEDO SHIPBUILDING CO., TOLEDO, OHIO

Purchasing Agent: H. M. Ives.

No name, hull 174, cargo Kinsman Transit Co., Cleveland; 590 LBP; 60 beam; 20 loaded draft; 12 mi loaded speed; 12,000 DWT; TE eng, 2000 IHP; 3 Scotch boilers, 13-6; keel July 15, est.

### THE CHARLES WARD ENGINEERING WORKS, CHARLESTON, WEST VIRGINIA

Purchasing Agent: E. T. Jones.

Gen'l Frank M. Coxe, hull 17, river str War Dept; 144 LBP; 28 beam; 9 loaded draft; 16 miles loaded speed; 175 DWT; TE eng, 1050 I HP; 2 Ward WT boilers, 2094 sq ft heating surface; keel July 16/21; launch Mar3/22.

Gen'l John McE. Hyde, hull 18, river str War Dept; sister to above; keel July18/21; launch Mar11/22.

Destrehan, hull 19, sternwheel towboat Pan American Petroleum & Transport Co; 136-6 LBP; 32 beam; 5 loaded draft; simple HP non-condensing eng, 18 in dia by 7 ft stroke, 225 lbs WP; 4 Miss River type boilers, 44 in dia; keel Mar15/22.

No name, hull 20, sidewheel car ferry Missouri-Illinois R R Co, subsidiary of St. Joseph Lead Co; 285 LBP; 54 beam; 5 loaded draft; 820 DWT; simple HP non-condensing eng, 22 in dia by 8 ft stroke, 200 lbs WP; 6 Miss River type boilers, 44 in dia, 26 ft long.

## Pacific Coast

### BETHLEHEM SHIPBUILDING CORPORATION, LTD. UNION PLANT

### Potrero Works

Purchasing Agent: O. W. Streett.

Submarines USN: S-31, hull 136; S-32, hull 137; S-33, hull 138; S-34, hull 139; S-35, hull 140; S-36, hull 141; S-37, hull 142; S-38, hull 143; S-39, hull 144; S-40, hull 145; S-41, hull 146; S-31 delivered May11/22; S-33, Apr17/22.

### Alameda Works

Chilore, hull 5309, combination ore and coal carrier Ore Steamship Co; 571-6 LOA; 550-1 LBP; 72 molded beam; 44 molded depth; 32-4 loaded draft; 11½ loaded speed; 20,000 D WT; Curtis turbines with Falk reduction gears, 5000 SHP; 3 Scotch SE boilers, 17-6x12, each 4287 sq ft; oil burners; keel Apr17/22.

Lebore, hull 5310, combination ore and coal carrier Ore Steamship Co; sister to above.

San Mateo, hull 5314, ferryboat Jas Rolph & Co; 230 LOA; 63-6 beam over guards, 42 molded; 19-6 molded depth; TE eng, 1400 IHP; propeller drive; 3 WT boilers; keel Aug27/21; launch May9/22.

No name, hull 5315, ferryboat Jas Rolph & Co; sister to above; keel Feb20/22.

No name, hull 5316, ferryboat Jas Rolph & Co; sister to above; keel May12/22.

### CHOLBERG SHIPYARD, VANCOUVER, B. C.

Purchasing Agent: W. Meed.

(These vessels to be completed by Dominion government.)

Sir Henry Drayton, hull 5, 4-masted barkentine Victoria Shipowners, Ltd; 250 LOA; 45-6 beam; 21-10 loaded draft; 2400 DWT; sailing vessel; shaft logs fitted for auxiliary but no machinery installed; keel May 15/20.

No name, hull 6, 4-masted barkentine Victoria Shipowners, Ltd; sister to above; keel June4/20.

No name, hull 7, 4-masted barkentine Victoria Shipowners, Ltd; sister to above.

### HANLON DRYDOCK & SHIPBUILDING COMPANY, OAKLAND, CALIF.

Purchasing Agent: R. Barker.

Dan F. Hanlon, hull 89, steam schr. D. J. Hanlon; 2500 DWT; 1400 IHP engines; 2 B&W boilers; work suspended.

### LOS ANGELES SHIPBUILDING & DRYDOCK CORPORATION, SAN PEDRO, CALIF.

Purchasing Agent: L. R. McFie.

No name, hull 37, double-ended steel ferryboat San Francisco-Oakland Terminal Railways; 225 LBP; 42 molded beam, 62-7 over guards; 11-6 loaded draft; 13 loaded speed; turbo-electric eng, 1350 IHP; 2 B& W WT boilers, 5000 sq ft total HS, 225 WP, 65 superheat, natural draft, oil-burning; keel May/22, est; launch oil-burning; keel July1/22, est; launch Sept25/22, est; deliver Nov 25/22, est.

No name, hull 38, double-ended steel ferryboat San Francisco-Oakland Terminal Railways, sister to above; keel July8/22, est; launch Oct2/22, est; deliver Dec8/22, est.

### NAVY YARD, PUGET SOUND

Medusa, repair ship for government; 460 LBP; 70 beam; about 19 loaded draft; 17-5 loaded speed; turbine eng, 7000 IHP; 2 WT express type boilers; 10,000 tons disp; keel Jan2/20; launch and deliver dates not set.

Holland, submarine tender for government; 460 LBP; 61 beam; about 20 loaded draft; 16 K loaded speed; turbine eng, 7000 IHP; two WT express type boilers; 10,000 tons disp; keel Apr11/21.

### NAVY YARD, MARE ISLAND

Montana, battleship USN; 660 LB P; 105 beam; 33 loaded draft; 23 loaded speed; 42,200 disp; turbo-electric engs, 60,000 SHP; 12 Bu's express boilers, 74,040 sq ft; keel Sept 1/20.

Decatur, destroyer USN; 310 LBP; 30-11½ beam; 9-4 loaded draft; 35 loaded speed; 1215 disp; geared turbine eng, 26,000 SHP; 4 Normand boilers, 27,000 sq ft; keel Sept15/20; launch Oct29/21.

### PRINCE RUPERT DRYDOCK & SHIPYARD, PRINCE RUPERT, B. C.

Manager: J. H. Pillsbury.

Francois Lake Ferry No. 2, steel ferryboat for Provincial Government; 66 LBP; 27 beam, 8 loaded draft; 12 loaded speed; twin gas engs, 50 IHP; keel Feb/22; launch and deliver June/22, est.

### W. F. STONE & SON, OAKLAND, CALIF.

Rascal, sloop builder's account; 41 LBP; 8-6 beam; 6 deep; launch May16/22.

Corinthian II, sloop Corinthian Yacht Club; 35 LBP; 8-8 beam; 6 deep.

No name, aux sloop builder's account; 49 LBP; 14 beam; 5-6 deep; gas eng, 15 IHP.

Sparrow, tug Alaska Packers' Association; 65 LBP; 16 beam; 5-6 deep; gas eng, 80 IHP.

No name, trawler Western Fish Company; 65 LBP; 16 deep, 7 loaded draft; Diesel eng, 120 IHP.

No name, trawler Western Fish Company; sister to above.

Pile-driver Naknek Packing Company; 40 LBP; 20 beam; 3 loaded draft.

### TODD DRYDOCK & CONSTRUCTION CORP., TACOMA

Purchasing Agent: C. L. Bankson.

Omaha, hull 100, scout cruiser US N; 555-6 LOA; 550 LBP; extreme beam 55-4; molded beam 54-9; depth molded 26; mean loaded draft 13-6; disp 7100 tons; Westinghouse Parsons turbines and reduction gear, 105,000 IHP; designated speed 34; 12 Yarrows WT boilers; keel Dec6/18; launch Dec14/20.

Milwaukee, hull 106, scout cruiser USN; sister to above; keel Dec13/18; launch Mar24/21.

Cincinnati, hull 107, scout cruiser USN; sister to above; keel May15/20; launch May23/21.

## Recent Repair Work

### KING & WINGE SHIPBUILDING COMPANY, SEATTLE

General overhauling: Clatawa, Calista, Standard Oil barge No. 3, Burton, Mary, Louise, Dauntless. Engine overhauling: Elva M.

### LOS ANGELES SHIPBUILDING & DRYDOCK CORPORATION, SAN PEDRO, CALIF.

Minor machinery repairs: Orinoco, Yale, Pow Pow (also painting), West Catanace, Lily. Piping repairs: Newport, Idaho (main steam pipe), John McMullen. Engine and compressor work: Vaquero. Diver inspection: Annette Rolph. Cleaning, painting, minor repairs: Cabrillo, Hermosa, Avalon (propeller repairs). Raising ladder lost in storm: J. E. Upson. Minor piping repairs: Lewis Luckenbach, Multnomah (copper). Minor machinery repairs: Redhook, Blue Triangle, Sierra, Babinda. Docking, cleaning, painting, loading aboard Forest King: Westerly. Emergency work to save from sinking: Virginia Olson. Miscellaneous repairs: F. J. Luckenbach, John McMullen, derrick barge. Cleaning and miscellaneous overhauling after being floated: Virginia Olson. Caulking lifeboats:

Thomas Crowley. Auxiliary machinery and main engine repairs: Deerfield. Extensive overhauling and repairs: Lieutenant Stanley L. Cochrane. Changing propeller: Henrietta. Scaling and painting hull, general engine overhauling repairs: Sequoia.

### NAVY YARD, PUGET SOUND

Miscellaneous repairs: Arizona, Capella, Seattle (preparation for commissioning). Docking and installation of rudder and propellers: Cincinnati. Docking and miscellaneous repairs: Delphy, Chauncey, J. F. Burnes, Somers, Percival, Farragut, Fuller. Miscellaneous repairs incidental to operation as district craft: Eagle No. 57, Sotoyomo, Mahopac, Tatnuck, Iroquois, Pawtucket. Care and preservation (out of commission): Oregon, Missoula, Charlotte.

### PORT ARTHUR SHIPBUILDING COMPANY, LTD., PORT ARTHUR, ONT.

Rudder, rudder shoe, stern bearing: Glenfinnan. Bottom, shoe, rudder, wheel: Martian. Stern bearing, rudder: James Whalen. Shoe and rudder: Mary Scott. Bow damage, shoe, rudder, wheel: Midland King.

### PRINCE RUPERT DRYDOCK & SHIPYARD, PRINCE RUPERT, B. C.

Docking, cleaning, painting, general overhauling: Prince George, Prince Rupert. Docking, cleaning, painting: Jas. Carruthers, Geo. E. Foster, Kelly. Miscellaneous repairs, docking, cleaning, painting: 6 barges and scows, 38 fishing vessels. Hull repairs after grounding, and additional extensive hull repairs consequent on second No. 3 survey: Prince Albert.

### STATEN ISLAND SHIPBUILDING COMPANY, STATEN ISLAND, NEW YORK

General reconditioning: Arlington, New York, G. L. Potter, Alice Stafford. Fire damage: Atlantic Highlands. Ice damage: Cecil County. General repairs: Colon, S. B. Hunt, Pawnee, Stanley Dollar, Stapleton. Painting and repairs: Ontario. Damage repairs: Spaniel. Conversion to barge: Sassacus. Conversion of cargo holds to fuel tanks: Southern Cross.

### TODD DRY DOCKS, INC., SEATTLE

Docking, cleaning, painting: Victoria, Barges 38-47 and 48 (Washington Tug & Barge Co.), C. M. & St. P. Ry. barges 1-6, Hoqua, Milwaukee, Jitney, West Ivan, Adour, Wanderer, Daniel Kern. Miscellaneous repairs: H. B. Kennedy, Ruth Alexander, Curacao, Contra Costa, Neponset. Docking, changing propellers, miscellaneous work: Colusa. Docking for repairs to bottom: Drummond barge 25. Repairs to pipes: Talthybius (water service), Lewis Luckenbach (copper). Deck and engine repairs: Tyndareus. Installing Todd fuel oil burning equipment: Victoria. Minor machinery repairs: President. Docking, cleaning, painting, miscellaneous repairs: Kennecott, Queen. Docking for survey: West Himrod. Cast iron propeller: Fulton. General overhauling: Starr I, II, III.

That "13" is not always an unlucky number was proved by inspection of the U. S. Quartermaster Department S. S. General McDowell, when she was placed in the yards of the Moore Shipbuilding Company, Oakland, California, for minor repairs, cleaning and painting.

After a close examination of the stern frame, which had been Thermit-welded in two places thirteen years ago, the Quartermaster Department saw no reason to renew the frame, as the welds showed no signs of imperfections. During this period the steamship has been in continuous operation. She travels between Army Posts on San Francisco Bay and is a busy boat, backing, starting and stopping many times a day, consequently putting a heavy strain on the stern frame.

### YARROWS, LTD., VICTORIA, B. C.

Docking, cleaning, painting, minor repairs: Princess Alice (feed heater repairs), Canadian Highlander, Canadian Britisher and City of Vancouver (underwater repairs), several scows. Windlass repairs: Thiepval. Manganese bronze propeller blades: Cheakamus, Prince Rupert. Docking, cleaning, painting, rudder repairs, straightening two propeller blades: Princess Charlotte. Making manganase bronze propeller: Chasina. Docking, changing propeller: Burrard Chief. Docking, cleaning, painting: Matsqui, Princess Louise. Docking, cleaning, painting, deck, hull, tank, engine room repairs: El Lobo. Constructing three electrically welded tanks for Shell Oil Company.

# Cost of U. S. S. B. Vessels

THE United States Shipping Board has made public the following statement from the general comptroller's department of the Emergency Fleet Corporation, giving a summary of the construction costs of the "State" boats, compiled as of May 10:

| New Name | Old Name | Length B.P. | Builder | Cost |
|---|---|---|---|---|
| President Van Buren | Old North State | 502 | N. Y. Shpbldg. Corp. | $4,084,695.58 |
| President Hayes | Creole State | 502 | N. Y. Shpbldg. Corp. | 4,085,573.61 |
| President Polk | Granite State | 502 | N. Y. Shpbldg. Corp. | 4,086,027.46 |
| President Monroe | Panhandle State | 502 | N. Y. Shpbldg. Corp. | 4,085,516.44 |
| President Harrison | Wolverine State | 502 | N. Y. Shpbldg. Corp. | 4,085,889.93 |
| President Adams | Centennial State | 502 | N. Y. Shpbldg. Corp. | 4,088,466.49 |
| President Garfield | Blue Hen State | 502 | N. Y. Shpbldg. Corp. | 4,088,274.71 |
| President Madison | Bay State | 518 | N. Y. Shpbldg. Corp. | 5,887,111.75 |
| President Pierce | Peninsular State | 518 | N. Y. Shpbldg. Corp. | 5,887,111.78 |
| President McKinley | Keystone State | 518 | N. Y. Shpbldg. Corp. | 7,041,552.23 |
| President Wilson | Empire State | 518 | N. Y. Shpbldg. Corp. | 7,041,551.44 |
| President Taft | Lone Star State | 518 | N. Y. Shpbldg. Corp. | 7,016,112.64 |
| President Lincoln | Hoosier State | 518 | N. Y. Shpbldg. Corp. | 7,008,964.8 |
| President Harding | Hawkeye State | 518 | Bethlehem Shpbldg. Corp., Sp. Pt. | 6,664,521.20 |
| President Roosevelt | Buckeye State | 518 | Bethlehem Shpbldg. Corp., Sp. Pt. | 5,992,652.6 |
| President Grant | Pine Tree State | 518 | Bethlehem Shpbldg. Corp., Sp. Pt. | 5,494,496.2 |
| Pan America | Palmetto State | 518 | Bethlehem Shpbldg. Corp., Sp. Pt. | 5,318,138.2 |
| Western World | Nutmeg State | 518 | Bethlehem Shpbldg. Corp., Sp. Pt. | 4,023,107.4 |
| American Legion | Badger State | 518 | N. Y. Shpbldg. Corp. | 7,309,189.3 |
| Southern Cross | Gopher State | 518 | N. Y. Shpbldg. Corp. | 7,302,848.1 |
| President Jefferson | Beaver State | 518 | N. Y. Shpbldg. Corp. | 7,317,318.1 |
| President Cleveland | Golden State | 518 | Newport News | 6,291,944.9 |
| President Jackson | Silver State | 518 | Newport News | 6,353,232.0 |
| | | | | $130,554,297.2 |

# HARBOR DEVELOPMENT

**San Pedro**—The United States Board of Engineers has approved the construction of three 1100-foot slips on the east side of the main channel for the Union Pacific terminal. Each of the slips will be 300 feet wide and 30 feet deep at low tide. The piers between will be 400 feet wide. The plans include the erection of transit sheds on the wharves on each side of the slips with an eight-track service yard in the rear and warehouses. It is estimated that the project will require the removal of about 670,000 cubic yards of earth. Bids for dredging the first of the slips have already been asked for.

Rapidly increasing demands for wharfage space at the outer harbor, as evidenced by the request of the Luckenbach Steamship Company for three hundred feet of additional warehouse space, will necessitate the removal of the naval forces at the submarine base from the warehouse that they are now occupying. At a meeting of the harbor commission it was decided that a committee composed of one member of the harbor board and one each from the chambers of commerce at San Pedro and Los Angeles should lay the matter before the commander of the base and offer to aid in solving the problem of a new location. It was indicated that, as a temporary accommodation, the city might erect on its outer harbor property another warehouse to be used later for commercial purposes.

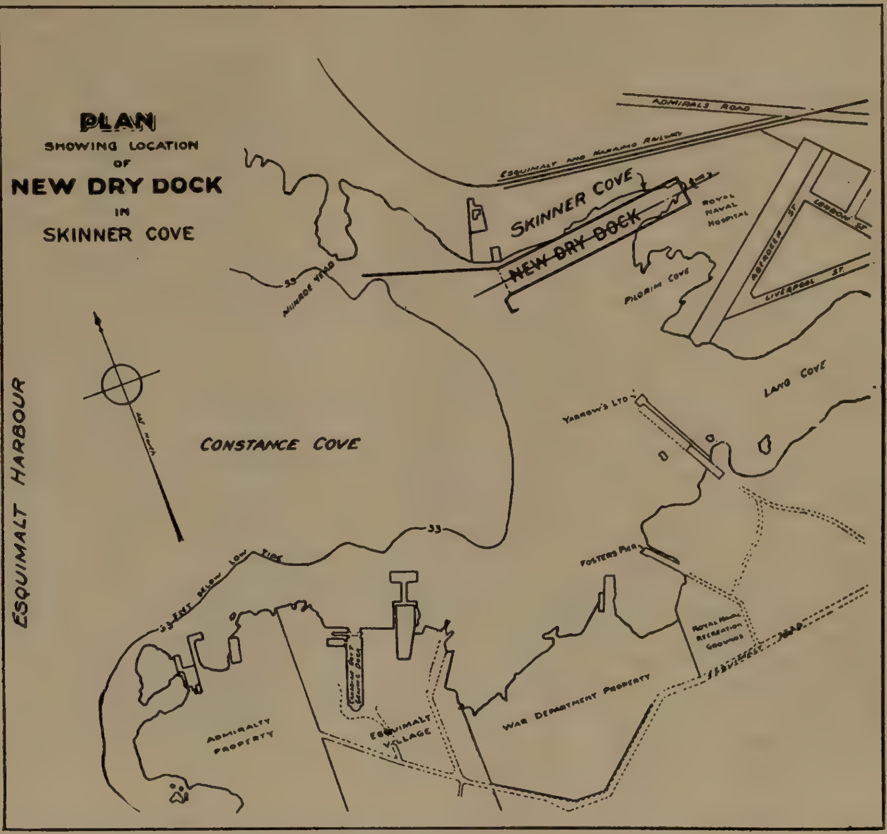
The harbor engineers are making plans to dredge a portion of the channel leading up to the Consolidated Lumber Company's yard. The depth will be increased to 25 feet and the width to 200 feet in order to accommodate the proposed new yards of the McCormick and Blinn Lumber Companies. A turning basin 400 feet wide will be provided midway between the two sites so that vessels, after discharge of their cargoes, may turn completely around before proceeding to sea. It is estimated that it will be necessary to remove about 500,000 cubic yards of earth, including a portion around the approach to the site of the proposed bascule bridge.

**Portland**—The Port of Portland reports that its dredging fleet, composed of four modern suction dredges, three of 30-inch capacity and one of 20, excavated during 1921 over 7,000,000 cubic yards. Two of the dredges in about five months opened up the North Portland harbor to a depth of 25 feet, a width of 300 feet, and a length of approximately 2 miles, allowing deep sea shipping to reach the North Portland industrial section. The port is particularly proud of the record of its suction dredge Tualatin, which during April in 430-1/3 working hours excavated from the harbor 746,545 cubic yards of mud and sand, with the excavated matter handled through 2400 feet of 30-inch pipe line being lifted an average of 25 feet. The best single day's performance was 46,555 cubic yards, with an average throughout the month of 1800 cubic yards an hour.

Work on the second unit of Terminal No. 1 is under way, dredging now being carried on to clear the north side of the slip at the terminal. The completion of the fill being made in midstream will allow the deck of the dock to be relaid and work on the superstructure started. This will include additions to the shed remaining on the property that will make the entire site a covered area, leaving outside only loading platforms and space for railroad tracks.

The Port of Portland's new sectional floating drydock recently made a satisfactory demonstration in that it raised the steamship Niels Nielsen, an 8800-tonner 409 feet long, from a draft of 9 feet 10 inches forward and 15 feet 6 inches aft until the deck of the drydock was 3 feet 10 inches above water, or keel 7 feet 7 inches, an average lift of 20 feet 3 inches, in one hour and twenty-three minutes. This included centering the vessel over keel blocks, pumping up pontoons until keel blocks took bearing on keel, stopping of pumps until bilge blocks were hauled home, and starting of pumps for final lifting.

**Tacoma**—The commissioners of the port of Tacoma have completed their plans for the extension of Pier 1 by 400 feet in length and 166 feet in width. This will add 50 per cent to the present storage space. The work will be done by the port through an arrangement with the Hart Construction Company, which was awarded the contract for the pile driving for the transit shed now being erected. The increased dock space will enable three large



This sketch, reproduced from Canadian Railway & Marine World, shows the location of the Canadian government's new graving dock at Esquimalt. The present dock site is shown in the lower left center. Work on the new dock was stopped by the contractors, P. Lyall & Sons Construction Company, March 31, but the government has decided to go ahead. When work was stopped all dredging on the site of the wharf and entrance channel had been completed; half of the dock site had been enclosed in a cofferdam and much excavating had been done; an outer cofferdam, to enclose the remainder of the dock site, was being built; the rubble mound for the landing wharf was about completed, and five timber cribs, sheeted with reinforced concrete, of which the wharf was to be composed, were almost ready to be placed on the mound. Plans of the dock provide for length of 1150 feet, width of 135, two inner stops to permit division into berths 400 and 750 feet long, and a landing wharf 800 feet long.

vessels to berth at the pier and a small one at the end of the dock. At present only two average size steamers and one small coaster can berth. It is estimated that the extension will cost $84,000 and take sixty days to complete.

**Seattle** — The Ames Shipbuilding & Drydock Company is preparing to widen the wharf at its big West Waterway site. This wharf, which was built in connection with the company's shipbuilding activities during the war, is more than 700 feet long and 50 feet wide, and its widening is the first step toward developing the site into a commercial shipping center.

Colonel George B. Lamping, port commissioner of Seattle, has been conferring with financial and legal officials of the Shipping Board in Washington relative to acquiring for the port of Seattle the 25-acre site of the former Seattle Construction & Drydock Company to be used for combined rail and steamship terminals and sites for manufacturing plants, somewhat along the lines of the Bush Terminal, New York City. Should the government adopt a free zone policy, the site is well situated to be included in such a zone. It is costing the board about $200,000 a year to hold the property, and in addition it has developed that the board is yet obliged to pay more than $2,225,000 on the site. The officials are, therefore, reluctant to sell at a greatly reduced price. On the other hand, they are anxious to avoid further expenditures, so that at their request Colonel Lamping has made a tentative offer of $500,000 for the property, payable at the rate of $25,000 a year.

**San Diego**—A new municipal pier three times the size of the present one will be erected by the harbor commission of San Diego in order to relieve the freight congestion at that port. Specifications as to size and type are to be drawn up and bids asked for without delay.

**Honolulu** — An appropriation of $180,000 is contained in the river and harbor bill just passed by Congress for the dredging of the proposed channel between Honolulu and Kewalo basin. When completed, this channel will be 800 feet wide, 35 feet deep and a half-mile long, and will provide much additional wharfage space. The total cost will amount to approximately $3,000,000, and the appropriation is a "continuing" one, to be followed by others until the entire project is finished.

**Hilo**—The board of harbor commissioners of Hawaii has authorized the preparation of plans for the rebuilding of Kuhio wharf, Hilo. This will be done section by section, and work on the first section will commence shortly. Concrete will be used in making the replacement. An extra section of wharf shed will be erected on the Hilo side, and the harborfront wall of this addition will probably be set back a little distance from the line of the old wall to avoid the possibility of contact between steamer tackle and the sides.

**Los Angeles** — The Los Angeles Athletic Club and the California Yacht Club have been negotiating with the Palos Verdes estates for a yacht harbor at Portuguese Bend, which is part of the estates. According to the present plans, the first development includes a 10-acre site, which probably will comprise the north point of Portuguese Bend, and a fine clubhouse.

# ABOUT PEOPLE

**C. B. Taw,** for some time in the finance office of the Shipping Board at Portland, has been made special disbursing officer in charge of accounts of vessels owned by the government and operated through controlling agents at Portland. Mr. Taw will have his office with the Columbia Pacific Shipping Company, the only directing operator at Portland. **William Landis** has been appointed to succeed Mr. Taw as auditor. Through this arrangement trust funds, which up to this time have been at the disposal of operators of Shipping Board vessels, will be handled by the board.

**Captain Inar A. Pedersen,** traffic manager of Los Angeles Harbor since March 1, 1921, has resigned because of illness, the resignation to take effect as soon as a successor is appointed by the Board of Harbor Commissioners.

**Lewis H. Schwaebe** has been formally installed as collector of customs for the Los Angeles district. He succeeds John B. Elliott, who held the post during two presidential administrations.

**M. Watanabe,** formerly manager of the Seattle branch of the Nippon Yusen Kaisha, has been made manager of the Yokohama branch of the same company.

**Hugh Mackenzie** has been promoted to general passenger agent of the Admiral Line, succeeding E. G. McMicken, who has been made passenger traffic manager. Mr. Mackenzie has been assistant general passenger agent of the Admiral Line for the past six years. Prior to that time he was connected with the Union Pacific Railroad and the Great Northern Pacific Steamship Company.

**J. N. MacGowan,** for several years on the general staff of A. F. Haines, vice-president and general manager of the Admiral Line, has been promoted to a position in the company's Shanghai office.

**Captain L. A. Cotton** has succeeded Captain Edward Watson as naval attache at the American embassy, Tokyo.

**Captain Fred V. Lohen** and **Second Mate Richard Hagar** of the Union Oil tanker Whittier have had their licenses suspended for three months and one year, respectively, for allowing their vessel to be wrecked off Point Arena, May 1.

**Sherwood M. Lowrey,** cashier of the American Factors, Ltd., has been appointed to fill the vacancy on the board of harbor commissioners of Hawaii occasioned by the resignation of Norman Watkins.

**Edward Ford** has been elected president of the Shipowners' & Merchants' Tugboat Company, San Francisco, succeeding the late Edward A. Christenson. **Arthur Cahill** was elected a member of the board of directors, as was also **Joseph J. Tynan,** who succeeds the late John R. Hanify.

**William H. Wall,** until recently claim agent for the Robert Dollar Steamship Company, has resigned. Mr. Wall plans to practice law, and, as he has made a study of transportation problems, to devote much of his time to the handling of claims.

**Captain R. D. Chandler,** for many years in charge of the Hongkong agency for Struthers & Barry, has resigned. **G. P. Bradford** has been named as Captain Chandler's successor.

**W. H. Peters,** formerly superintendent of Rainier National Park, has been appointed manager of the port of Grays Harbor. Mr. Peters was connected with the Army engineer's office in the Oregon district for several years. He was also at one time superintendent of the Grand Canyon National Park.

**Captain Thomas Ellis** has been suspended for sixty days by the Federal inspectors of hulls and boilers at Honolulu. Captain Ellis was mas-

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ter of the steamer Fairfield City, which recently ran aground on a coral reef at the entrance to that harbor. She was only slightly damaged.

**Harry Brown** has resigned as a director and as technical manager of the Bethlehem Shipbuilding Corporation, Bethlehem, Pennsylvania.

**Gale H. Carter** has been made vice-president of W. R. Grace & Company in charge of the firm's entire operations. **E. T. Ford,** who has been acting as manager for the company in San Francisco, has been officially appointed to the position.

The Air Reduction Company, Incorporated, announces the election of the following officers at a meeting of the board of directors held May 24, 1922: **A. R. Ludlow,** formerly vice-president in charge of sales, first vice-president; **M. W. Randall,** formerly secretary, vice-president and secretary; **Herman Van Fleet,** formerly chief engineer, vice-president and operating manager; **Dr. F. J. Metzger,** vice-president in charge of research and development.

**Shipping Board Changes: Allan McLane,** Jr., formerly head of the Far East and Long Voyage Trade Division of the traffic department in Washington, will go to London, where he will be connected with Runciman, Ltd., agents of the United States Lines. **V. J. Freeze,** former manager of the traffic department, Baltimore, succeeds Mr. McLane. The name of Mr. Freeze's successor has not been announced. **T. Park Hay,** former St. Louis office manager, has been transferred to take charge of the Chicago office. **Nathan A. Smyth,** formerly general counsel, has resigned, as has also H. G. Aron, special counsel in receivership matters. Both will be members of the law firm of Lee, Smyth, Aron and Wise.

**Harry Brandt** of Seattle has been appointed traveling representative of the Cunard Line.

**Captain David Francisco Van Pelt,** master of San Francisco Bay ferryboats, has retired after forty-eight years of service.

**C. R. Albers,** Portland, Oregon, agent of the McCormick Line, has been made district traffic manager, and is succeeded as agent by Hillman Lueddmann, formerly assistant agent.

**William Smith,** formerly with Smith-Rice Company, has been appointed manager of the Crowley Derrick Company, San Francisco.

**A. G. Henderson** has been appointed general agent at Chicago for the Pacific Steamship Company. His territory will extend from Cleveland, Akron, Columbus and Cincinnati, inclusive, west to and including the Missouri and Mississippi Rivers, and he will represent all departments, coastal, intercoastal and foreign, of the company. **F. H. Reece** has been made commercial agent at Portland for the same company. Mr. Reece was formerly with the Williams Steamship Company.

**M. M. Anderson** has been named Seattle wharf agent for the Canadian Pacific Railway. He was formerly with the British Columbia Steamship Company in the capacity of chief clerk. **H. F. Howard,** whom Mr. Anderson succeeds, has been transferred to Victoria.

**K. Kimura** has been made manager of the steamship department of Suzuki & Company at Portland. Before taking up his new duties, Mr. Kimura visited London and other European ports for the purpose of making a general survey of conditions.

**Sanford H. E. Freund,** who has been holding the post of special counsel in charge of contracts, opinions and recoveries, for the Emergency Fleet Corporation, has been appointed general counsel for that organization. Mr. Freund, a graduate of Harvard Law School, has at different times in his career been a member of the legal firms of Saltonstall, Dodge & Carter, Boston, and of Shearman & Sterling, New York, and has served as Eastern attorney of the Chicago, Rock Island & Pacific Railroad, assistant general counsel for the Great Northern Railway Company, director of the clearance division, United States employment service, and assistant general counsel of the United States railroad administration. He succeeds Nathan A. Smyth, who has resigned.

**Captain C. W. Saunders,** of the Matson Navigation Company, is chairman of the maritime and harbor committee of the San Francisco Chamber of Commerce appointed to serve during the coming year. Other members of the committee are: Captain A. E. Anderson, California Transportation Company; George C. Boardman, Boardman Brothers & Company; Arthur L. Black, Bank of California; Captain J. H. Bennett, Bennett & Goodall; John Cushing, Williams Dimond & Company; A. W. Follansbee, Jr., Fireman's Fund Insurance; Hugh Gallagher, Pacific Steamship Company; Thomas A. Graham, Pacific Mail Steamship Company; C. M. Levey, Western Pacific Railroad Company; Charles R. McCormick, Charles R. McCormick & Company; J. C. Rohlfs, Standard Oil Company; Philip S. Teller, Norton, Teller & Company.

## Deaths

**Mrs. Frank Nash,** wife of Captain Frank Nash, in Berkeley, California, May 19.

**Berkeley C. Flockton,** agent for the Union Steamship Company at La Paz, Bolivia, in that city May 15.

**Captain Edwin Johnson,** captain of the ferryboat Cazadero plying between Sausalito, California, and San Francisco, at his home on Corinthian Island near Belvedere, California, May 15. Captain Johnson had been in the service of the Northwestern Pacific Railroad, operators of the ferryboat, thirty-three years.

**Sir Ernest Manifold Raeburn, K. B. E.,** director general, in America, of the British Ministry of Shipping, in New York, June 1. Sir Ernest had been conducting for Great Britain the negotiations between the government and the United States Shipping Board for the settlement of counter-claims, but it is thought that his death will not greatly delay the matter.

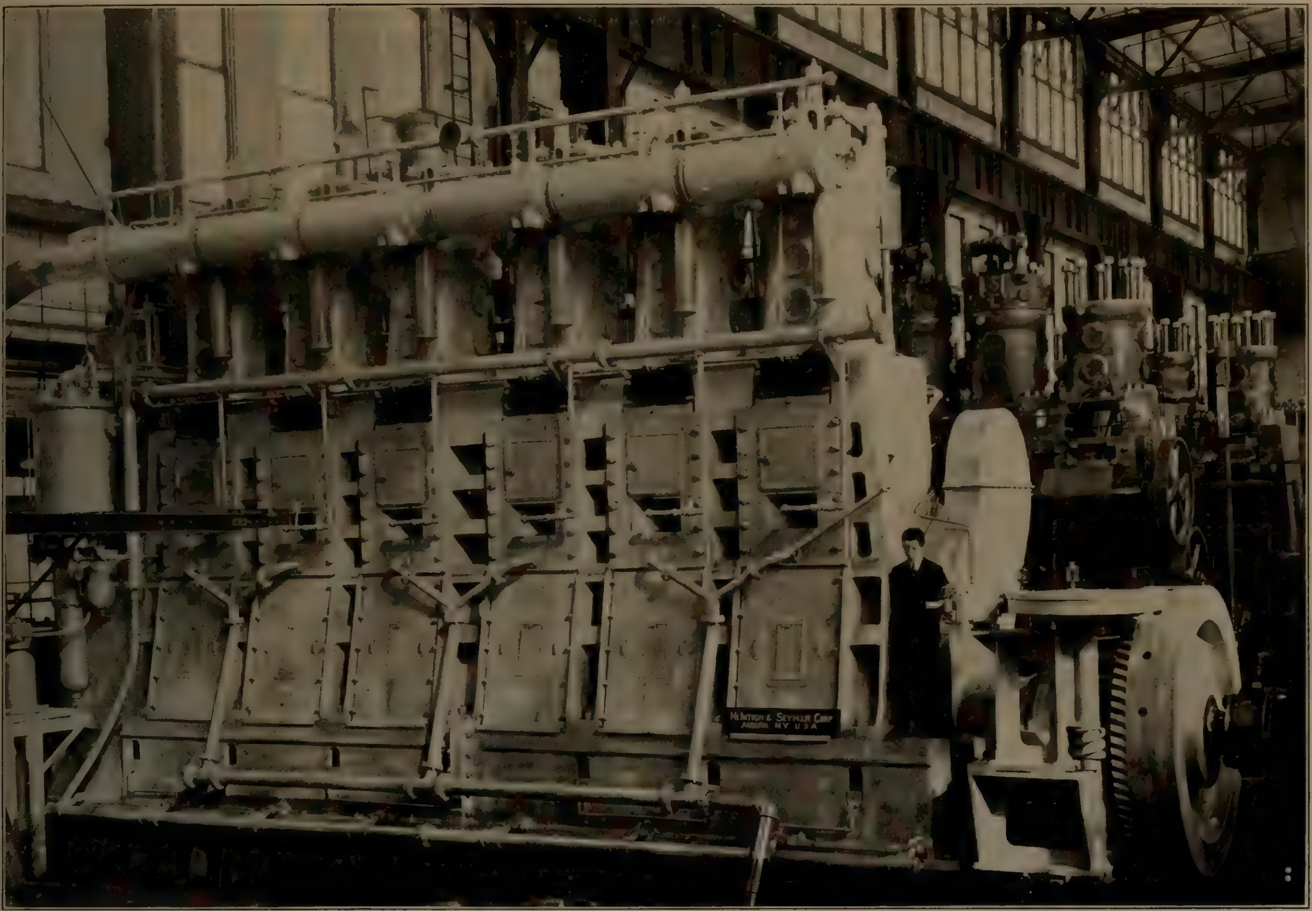
**Captain Bruce McKay,** formerly of the Pacific Mail, Pacific Coast, Globe Navigation, Alaska Steamship, Pacific Steamship and Barber Line services, in New York April 28.

## Shipping Notes

The Luckenbach Steamship Company has purchased from the United States Shipping Board the Eastern Merchant, 12,995 tons, 13 knots; the Eastern Trader of the same size and speed; and the Cape May, 10,200 tons, 12 knots; an aggregate of 36,190 tons, which increases the total deadweight tonnage of the company's fleet to 255,772. The company may buy two additional ships from the board in the near future, according to report. The Eastern Merchant and Eastern Trader were built in Japan by the Asano yard.

Williams, Dimond & Company, Pacific Coast agents of the American-Hawaiian Steamship Company, announce that they will continue to maintain their dual delivery facilities at New York, giving eastbound shippers and consignees the option of Manhattan or Brooklyn delivery.

The Furness Prince Line is planning to resume its service between the Pacific Coast and Great Britain and the Continent, according to Frank Waterhouse of Seattle, general agent for the line. It will be inaugurated by three vessels now being operated in the Puget Sound-Oriental trade, their places to be taken by other ships in order that the trans-Pacific service may continue without interruption.



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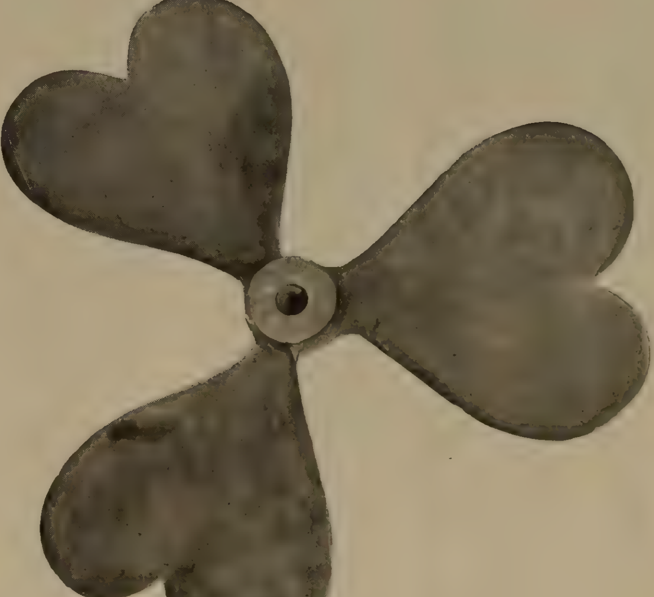
# A NEW PROPELLER DESIGN

THE G. W. Morrow Company of San Francisco has developed and is distributing a new design of propeller under the trade name of Cloverleaf. This design, as will be seen from the accompanying illustration, locates a large portion of the blade area at the outer half of the blade, the hub end being reduced to such small dimensions as to give almost the impression of weakness. This shape of blade, however, has demonstrated in practice not only that it functions with less slip, less cavitation, greater effective thrust and greater efficiency than the orthodox design, but also that it has sturdiness and ample strength under severe towing jobs. So sure is the firm of these results that it guarantees them as against those of any other shape of blade of the same diameter and pitch.

Many Cloverleaf installations have been made on the Pacific Coast, and at the present time the firm is two weeks behind in filling orders. A contract is now in force with the Oregon Brass Works of Portland for $125,000 worth of Cloverleaf wheels, and the G. W. Morrow Company is making arrangements to manufacture in San Francisco.

At the present time the largest Cloverleaf propeller in use is 36 inches in diameter. Experiments now under way on larger wheels show promise of great improvement over the standard patterns.

Agencies are being established in all the seaboard and Great Lakes states, and it is confidently expected that quite a demand will be developed among the users of power boats and that this will gradually extend to steamship operators.



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|---|---|---|---|---|
| 0 | 90 | 500 | 1550 | 2030 |
| 10 | 120 | 500 | 1550 | 2030 |
| 20 | 184 | 500 | 1550 | 2030 |
| 30 | 198 | 500 | 1550 | 2030 |
| 40 | 210 | 500 | 1550 | 2030 |
| 50 | 210 | 500 | 1550 | 2030 |
| 60 | 198 | 800 | 1550 | 1965 |
| 70 | 196 | 800 | 1550 | 1965 |
| 80 | 190 | 1000 | 1550 | 1965 |
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**Handbook on Reducing Valve Economics**—The Atlas Valve Company, Newark, New Jersey.

After fifteen years of exerience in the manufacture, ale and installation of reducing valves, the Atlas alve Company, Newark, ew Jersey, are making an nteresting announcement. hey state that most reducucing valves, as used toay, are needlessly large—ften twice or three times oo large. Consequently they re needlessly expensive.

They state that simply beause a pipe is a 3-inch pipe is common practice to orer a 3-inch reducing valve, hereas a 1½-inch or even 1-inch valve might do as ell or better. They argue hat since a reducing valve virtually an "obstruction" the steam pipe anyway, hy make the valve body rge and costly? Why not ake it just large enough to commodate the valve and eat and permit sufficient lve lift?

The whole matter of reucing valve economics is lly covered in a new handok issued by the above anufacturer. The handbook es into careful and complete detail on all points that are closely connected with and vital to reducing valves. The flow of steam through pipes is handled in a decidedly simple and understandable manner. Charts and formulas are entirely eliminated. Handy tables make it possible for the user to determine at a glance just what a given pipe size will do. Or, the tables will enable the user to select the proper size of pipe needed for a given weight of steam per minute. Reducing valve sizes are, of course, completely covered. Other important features are superheated steam, extra heavy pipe, pipe fittings, leaders to heating systems, pipe friction allowances, steam velocities, etc.

Further to assist the user in making everything perfectly clear and plain, the handbook abounds in problems all worked out. Therefore, in solving any reducing valve problem, if the user simply does it "according to the rules laid down in the handbook", he cannot go wrong.

The manufacturers state that upon request they will send a copy to any reader of this publication. Every engineer, plumber, plumbing contractor, or anybody else who uses, buys, selects, specifies valves or who is at all interested in reducing valve economy should always keep a copy of this valuable little treatise in a handy place.

# BOOK REVIEWS

**Ships and Supermen,** by Greville E. Matheson; 105 pages; bound in white pressboard with three-color cover illustration; published by Syren & Shipping, Limited, London.

This book of humorously satirical ballads concerning sea adventures and sea characters is a collection of the author's verse that has previously appeared in various publications. It is divided into two parts: Ships and Men, which records in a very happy vein the observations of the author along London docks and his excursions into the realms of imagination after "prolonged courses of Kipling" and other poets; and Ships and Supermen, which depicts "what might happen" in A. D. 1930 in the event of "nationalization of shipping."

While the treatment is peculiarly applicable to the British merchant marine, American shipping men will find many a chuckle between the covers of this book.

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**Lloyd's: Yesterday and Today,** by H. M. Grey; 115 pages; bound in blue buckram with gold stampings; published by Syren & Shipping, Limited, London.

A revision of a sketch of the history of the institution of Lloyd's that was published many years ago and is now out of print. The book is divided into five chapters and contains four photographic illustrations. It is very sketchy in its treatment but gives a fairly comprehensive picture of the corporation of Lloyd's and of its work in the maritime world. Many interesting anecdotes and instances are given of the old coffee-house days, of insurance frauds that have been perpetrated, of human interest incidents from the records, and of some of the more outstanding personalities that have lived out their careers in the offices at the Royal Exchange.

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**Motorship Year Book 1922;** 130 pages; bound in blue buckram with orange stampings; published by Miller Freeman & Company, New York.

The most valuable part of this book is the table of the motorships of the world, giving all of their principal characteristics, both as to hull and machinery, and thoroughly revising the list published in the Year Book for 1921. The list appears to be accurate and complete and contains the names and dimensions of every motorship built from 1904 to January, 1922, where the B. H. P. is over 200.

In addition to this listing there is a general article on the American motorship and oil engine construction program during 1921, a list of the merchant motor vessels launched during 1921, three excellent technical articles on tar oil fuel for diesel engines, shaft diameters and ship conversions, exhaust pipings and mufflers for motor craft.

There are also reproduced in full the rules for the construction of marine internal combustion engines formulated by the American Bureau of Shipping, and Lloyd's revised rules for the construction and survey of diesel engines, in addition to an excellent compilation of questions and answers for motorship engineers.

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**Brown's Practical Pocketbook for Merchant Seamen, by J. McKerrell;** 130 pages; bound in red pantasote with gold stampings; illustrated with numerous diagrams; published by James Brown & Son, Glasgow, Scotland.

This is a very convenient little book of practical notes and formulae collected in actual experience and covers a very wide range of miscellaneous general information. It makes no pretense of any elaborate arrangement of contents, but is well indexed and should prove of great benefit to merchant marine officers.

The book appears to be the work of a man who out of a very wide experience has made up his own notebook, and in our judgment it should have been printed with blank leaves between the text pages so that other officers using the book could have qualified the conclusions, methods and formulae adopted by the author with the interpolated results of their own independent investigations.

---

**Planning Production for Profit,** by John H. Van Deventer, M. E.; 335 pages; bound in red buckram with gold stampings; published by the Engineering Magazine Company, New York.

This volume is a compilation of some of the articles that have appeared during the last two or three years in Industrial Management. The book is divided into eight departments, under which are grouped special articles by experts, relating to the general heading of the department. These departments cover in the order in which they appear in the finished volume: organizing for production; stock systems, storekeeping, and inventories; time-study; instructions and supervision; analysis; planning and co-ordinating; routing; inspection, organization and management. In relation to these various topics there are compiled twenty-five articles, many of which describe in detail the methods used in some of the most successful industrial and manufacturing plants in America.

The articles are illustrated with many figures and charts that mainly relate to the forms through which records and the results of planning operations are kept, and to production charts for detail operations in the manufacture of a great variety of articles.

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**Material Handling Cyclopedia.** 850 pages, with numerous illustrations, diagrams and plates; published by the Simmons-Boardman Publishing Company, New York.

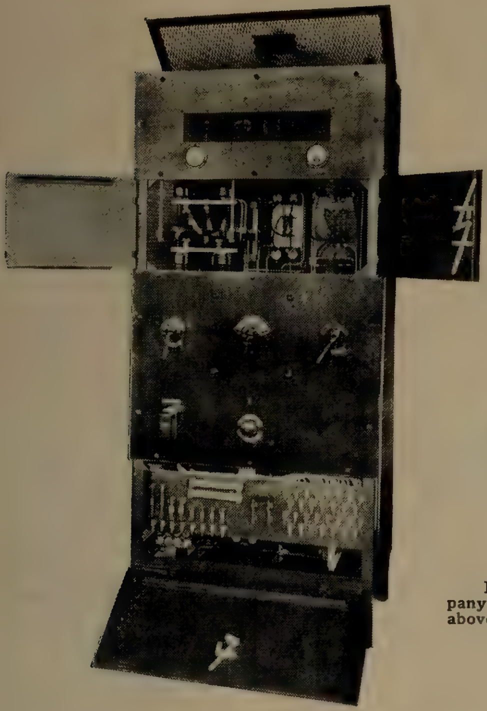
An ambitious compilation intended as a reference book covering definitions, descriptions, illustrations and methods of material handling machinery as used in American industries. The compilation and editing is by Roy V. Wright, managing editor of Railway Age; John G. Little, formerly Eastern engineering editor of Railway Age, and Robert C. Augur.

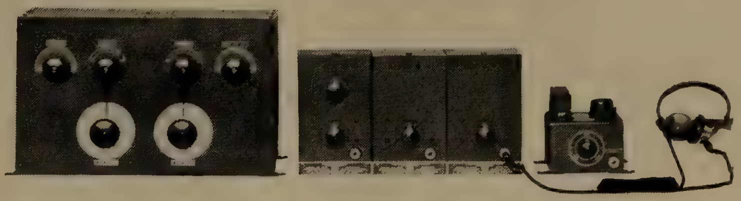
The book is arranged in three principal sections: definition, illustrated text and catalog. The definition section, which is valuable, perhaps the most valuable, portion of the book, is divided into general definitions and electrical definitions, and is compiled by E. F. Church, Jr., head of the mechanical engineering department, Polytechnic Institute, Brooklyn, New York, assisted by P. A. Cushman of the same college.

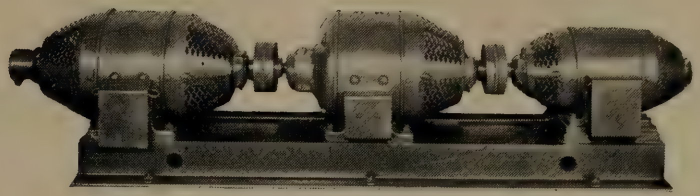
The illustrated text section is subdivided into eight main divisions covering hoisting machinery, package handling conveyors and elevators, loose material conveyors and elevators, conveying machinery details, elevators, trackless transportation, industrial rail transportation, and handling systems. Each of the main divisions of this section is compiled by a nationally known expert in the particular line handled, so that the entire book with its illustrations and catalog section forms a symposium of the best information available on material-moving mechanisms.

# A COMBINATION RADIO SET

## Shipowners Display Interest in New Telephone and Telegraph Equipment of the Radio Corporation







Parts of the combination telephone-telegraph set built by the General Electric Company for the Radio Corporation of America. At the left is transmitter equipment; above is receiving equipment; and below is the generator for transmission.

A COMBINATION telephone and telegraph set built by the General Electric Company for the Radio Corporation of America has been placed on exhibition in the Merchants' Exchange, San Francisco. It is of much interest to shipowners not only because it is the first combination set of its nature to be constructed but also because the installing of such equipment on board ocean vessels, especially passenger liners, promises to become brisk within a few months. In fact, it is announced by Arthur A. Isbell, general superintendent of the Radio Corporation for the Pacific Coast, that a set already has been installed on the steamship H. F. Alexander of the Admiral Line and that the other Admiral vessels likewise will be fitted with similar apparatus.

The new set is designed to afford three methods of communication: telephony, continuous wave telegraphy and interrupted continuous wave telegraphy. The apparatus is so simple and "fool-proof" that all the operator need do is to throw three switches on the face of the panel. On board ship the main transmitting panel is installed in the operator's room and an extension to the captain's room or elsewhere as desired. The extension apparatus includes a telephone transmitter, a receiver and a push button for ringing in. The vacuum tubes are of the 50-watt and 250-watt types. Special metal casings and screen protectors are used.

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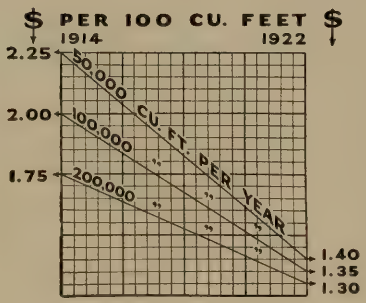

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# Pacific Marine Review

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PACIFIC MARINE REVIEW,
THE NATIONAL MAGAZINE OF SHIPPING
576 Sacramento Street, San Francisco

339 at No. 30 Church Street,
New York City

500 Citizens National Bank Building,
Los Angeles

Official organ of the Pacific American Steamship Association

Entered as second class mail matter June 20, 1913, at postoffice, San Francisco, under the act of March 3, 1879.

Subscription price, a year (domestic) ........................ $2.00
(foreign) ........................ 3.00
Single copies ........................ .25

Published on the fifteenth of each month. Advertising forms close on the tenth and editorial forms on the twelfth.

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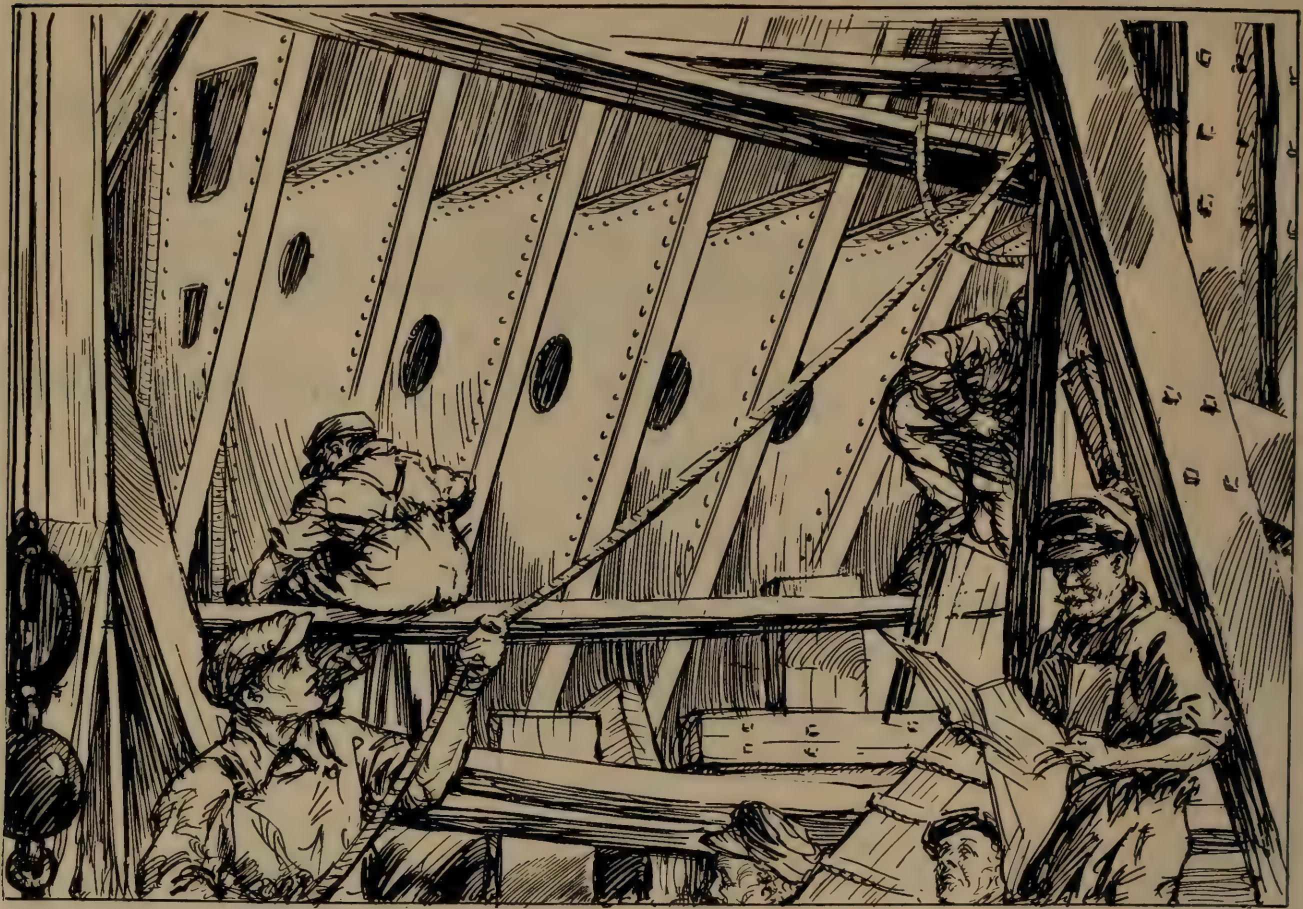

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## Protection For The Shipbuilder

REPRESENTATIVE GREENE'S bill to withdraw the privilege of American registry from foreign-built vessels is a natural concomitant of the Subsidy Bill and as such should be accepted without protest by shipowners of the United States. One of the factors considered by the framers of the subsidy plan was the greater cost of construction in American shipyards; presumably provision, in whole or in part, has been made to offset that differential. But another and probably a more important consideration is this: in view of the enormous business now being handled in the coastwise trade of the United States, owners of cargo vessels by all means should desire to have their vessels given unconditional American registry, so that, when occasion demands, they may be used in domestic transportation. Foreign-built ships, it may be pointed out, are not eligible to the coastwise trade unless acquired by citizens of the United States prior to February 1, 1920, or by the Shipping Board prior to June 5, 1920. Any foreign-built tonnage purchased since those dates, therefore, may engage in foreign trade alone.

It is true that possible employment in coastwise trade will appeal more strongly to owners of freighters than to owners of tankers and passenger vessels. The last type especially is built for certain routes and is not likely to be employed here and there as is the cargo-carrier. On the whole, however, the coastwise trade is so large a factor in American shipping that an opportunity to engage in it is quite important to most actual or potential owners of vessels.

Attention may be invited to one other consideration. The American shipbuider, of all persons engaged in the production or operation of vessels, is in the least enviable situation, largely because there is so much tonnage under the United States flag that little new work is in prospect. Yet, for purposes of national defense, he may be the most worthy of encouragement, for capital warships, as Homer L. Ferguson recently pointed out, cannot be built by inexperienced forces, and the personnel of yards must be maintained in a state of reasonable efficiency. That end can be accomplished only by American shipowners giving them new work, for the remainder of the world will continue to build in its own yards.

## More Ships At Less Cost

A STATEMENT by Chairman Lasker of the Shipping Board, which appears in his letter to members of Congress urging support of the Subsidy Bill, should be given nation-wide attention. "The proposal contemplates that should America ultimately get the 7,500,000 gross tons necessary to carry half of our overseas commerce, the cost to the treasury, directly and indirectly, would be something like forty million dollars per annum," says he. "The four hundred ships the government is now operating at a cost of $50,000,000 a year would, under the proposed measure, draw but slightly more than $8,000,000 government aid."

That the subsidy would cost less than the Shipping Board's deficit has, of course, been dwelt upon at length, but few persons have given much thought to the fact that the $50,000,000 deficit is being incurred in operating such a relatively small number of vessels. Besides saving the treasury $20,000,000 or so, therefore, the subsidy should operate to put millions of additional tons of steamships on the seas.

## A Chemical Reaction

WHEN a representative of the American-Hawaiian Steamship Company at a meeting of the United States intercoastal conference in New York in June stated that his company withdrew from the organization, he precipitated a rate war without parallel in American domestic shipping. All indications were that the fight would be to a finish, with the stronger lines giving no quarter.

The word "precipitated," used in the preceding paragraph, is to be assigned its precise chemical meaning. The rate war was precipitated just as a substance, held in solution, is separated and appears in a concrete state, for rate-cutting had existed so long and in so aggravated a form that few operators were so bold as to make even a pretense of abiding by conference tariffs. Such a situation was certain to lead to open war sooner or later. Only an occasion was needed, and an occasion arose when some members of the conference, themselves suspected, probably with the best reason, of quoting reduced rates, declined to make those self-same rates legal by incorporating them in the tariff. Thereupon the American-Hawaiian, wearied of guerilla tactics, published a formal declaration of hostilities. No sooner had it reduced rates, however, than the Luckenbach Line announced that it did not propose to follow in any cutting; it intended to assume the lead. Inasmuch as the Isthmian Line, the remaining one of the "big three", never had been known to flee from trouble, the struggle became a battle of giants and the outlook for the weaker companies grew dubious indeed.

From the situation thus created only two outcomes offer themselves: one, the elimination of the so-called "unfit"; the other, the passage of an act by Congress putting the intercoastal lines under the Interstate Commerce Commission or preferably under the Shipping Board, the government body to have the power to force the observance of minimum rates. Either solution would be acceptable to the strong companies. That they should welcome strict government supervision and regulation is not at all surprising when one considers their excellent service, which alone would be sufficient to give them a commanding position provided that their competitors could not quote lower rates.

The latter solution, that of government regulation, is made imminent because of the effect of the rate war on the railroads. Attention has been invited by more than one competent authority to the absurdity of the railroads attempting to compete with steamships that can change their rates overnight. The I. C. C., therefore, might be expected to take a hand. That it may seek to do if the Shipping Board is not given immediate power to deal with the situation. But Vice-President Love of the Emergency Fleet Corporation is reported to have a plan in readiness. Now is the time for him to act and have a bill introduced in Congress.

## Los Angeles Triumphs

WHEN shipbuilding began to wane eighteen months ago most of the yards that had arisen during war time frankly abandoned effort to continue and either closed their gates or turned to other work. This was true so nearly universally that it is surprising to discover here and there a new plant that managed to survive the post-armistice frost; but some there are, and conspicuous among them is the Los Angeles Shipbuilding & Drydock Corporation. Its recent success in obtaining contracts for construction of two steel ferryboats for the Key Route of San Francisco, its decision to merge its interests with those of the Massett Timber Company and now its ability to compete with Atlantic yards, as demonstrated by its being low bidder on reconditioning the Shipping Board steamships City of Honolulu and City of Los Angeles (ex Huron and Aeolus), are signs in plenty that the management is both desirous and able to remain in business. The yard was, in fact, able to go $25,000 below its closest competitor on one vessel and $20,000 on the other, although the aggregate of both bids was only about $200,000.

It would have been easier for Fred L. Baker and Erle M. Leaf, the president and vice-president of the company, to close their plant when work for the Shipping Board was completed. Instead they chose to install a floating drydock, the first that Los Angeles had had; to take back the steamships Yale and Harvard from the government and operate them under the house flag of the Los Angeles Steamship Company; and, not at all alarmed at the failure of a Shipping Board freight line to the Orient from Los Angeles, they sought and obtained the Aeolus and Huron for a Los Angeles-Honolulu service. The initiative and determination manifested by Messrs. Baker and Leaf are typical, in greater or less degree, of the city that has overcome great obstacles.

## Section 23 Interpreted

ONE effect of the rules and regulations governing the application of Section 23 of the Merchant Marine Act of 1920 should be the encouragement of triangular or quadrilateral steamship routes. That such effect should flow from a section exempting earnings of American vessels engaged in foreign trade from war-profit and excess-profit taxes may appear, at first blush, a trifle strange; but a statement issued by the Shipping Board will serve to clarify the situation. "The provision that net earnings in relation to which the tax is waived must be net earnings from a vessel 'operated in foreign trade'," says the board's summary of the rules, "does not mean the vessel must have been exclusively operated in that trade. The construction which has been applied by the Shipping Board and the Treasury Department in these rules is that the vessel may have engaged during the year both in coastwise and in foreign trade, but that the provisions of the act apply only to that part of its earnings which accrue from the transportation of goods in foreign commerce; in this way, the section indirectly encourages owners to use their vessels in foreign trade."

Let us take, for example, the American-Hawaiian's European service. Vessels steam from the Pacific Coast of the United States for the United Kingdom and the Continent with cargoes that, in view of conditions in general, are quite good; once in Europe, however, they find little or no freight for the United States and especially for the Pacific Coast, so that they are returned to the Atlantic Coast of the United States, where they load for ports of the Pacific. A service such as this by all means should be encouraged; the inauguration of more routes of this nature is eminently desirable; and both ends will be served, in greater or less degree, by the ruling of the Shipping Board and Treasury Department, which means, in brief, that a vessel may engage in both coastwise and foreign trade without forfeiting any rights gained in the latter.

## The Price Of Opium

FOR several years the standard price of a five-tael tin of first-class smoking opium in Honolulu has been about $125. A five-tael tin is about one-third the size of a package of soda biscuit and is between seven and eight ounces in weight. In other words, smoking opium landed in Honolulu is worth almost its weight in gold and but little less in such ports as San Francisco and New York, which have large Chinese populations; while on the other hand the price in Hongkong or Macao is such as to make smuggling the drug into the United States one of the most profitable ventures ever undertaken by man.

These facts are cited because the United States government now has power to seize vessels on which contraband drugs may be found. Time was when the master of an offending vessel merely could be fined, but few cases, or any, ever occurred of the master himself paying the penalty, for his employers as a matter of course and of justice reimbursed him. Steamship operators, therefore, had every reason to wish to prevent smuggling; yet they failed in large part because Chinese will smoke opium and Caucasians and Japanese and Chinese will smuggle. Steamship operators will continue to fail; the United States customs will be able to achieve only a partial success, and even that will be denied unless vigilance be unremitting. Those who believe otherwise need only look into customs records that tell of the exploits of opium-smugglers, beside whom our newer "rum-runners" are guileless neophytes. These aspects of the situation should be considered by government officials in enforcing the Jones-Miller Act.

# THE MERCHANT MARINE ACT, 1922

## A Symposium by Men Prominent in Shipping. Chairman Lasker Explains and Justifies Principal Provisions of the Bill

**By Albert D. Lasker, chairman, Shipping Board**

UPON the bill now before Congress, known as the Merchant Marine Act, 1922, depends the immediate welfare of our merchant marine, the general prosperity of our country, and to a large extent its future safety. This measure, as well as the conditions which demand it, are unique in American history. Heretofore a merchant marine has been considered desirable; today it is recognized as essential. On previous occasions the effort has been to create a merchant fleet; now the problem is what to do with that which we have. In the past our naval strength was our fighting fleet and we hoped to make up in combatant vessels what we lacked in auxiliary ships. Now by treaty we have so limited our combatant ships that the potential value of the commercial type of vessels is tremendously enhanced.

### A Nation of Exporters

It is unnecessary to dwell upon the importance of a merchant marine from the standpoint of trade. The lesson of the great war is all too fresh in our minds. The United States is, and will be for many years, an exporting nation. If the buyers control the means of transportation they are thereby enabled to set their own prices upon their purchases, for we, the sellers, will have no means of offering our goods in other markets. Who controls ships controls commerce, and who controls commerce controls the world.

It is equally unnecessary to dwell at great length upon America's position at sea from the standpoint of national defense. We are separated from all of the great powers by the oceans, and should our country unhappily, and despite the efforts of our peaceful people, become involved in war, the struggle would be conducted at a great distance from our shores and would make inordinate demands upon a transportation system.

### In Time of War

Our entry into the world war showed the enormous requirements involved in the transportation and maintenance of an army overseas. In that war our Navy was quiescent. But few of its units, and those small ones, were actually sent overseas. In spite of the fortunate possession of nearly 700,000 tons of enemy shipping seized in our ports, it was necessary to call upon our allies to transport the greater part of our soldiers, and we were obliged to build with feverish haste and at extravagant cost a huge fleet of cargo vessels to sustain those soldiers after they reached France.

It is the possession of this hastily built fleet that forces positive action upon our part, that prevents our treating our merchant marine question as the academic one it always has been before. We now have a nucleus of a fleet that cost us billions to build and is costing us millions to maintain. If we do not quickly and intelligently adopt a policy for the future of this fleet and for those additions which we need to round it out and make it a permanent and efficient arm of commerce and defense, those billions of dollars will be utterly lost and the millions which we are spending to maintain trade routes will be wasted.

### Aims of the Act

It is to make possible the disposal of the good vessels in our emergency fleet, to induce the building in American shipyards of the needed types we now lack, and to insure the marketing of our surplus products by guaranteeing for them adequate carriage under our own flag, that the Merchant Marine Act of 1922 was proposed.

The act itself is a combination of direct and indirect aids. That is to say, it provides as far as possible for the removal of handicaps to our ships and for the extending of assistance by the government without direct charge on the treasury. If these indirect aids prove sufficient to give us that merchant marine which we so clearly need, direct aid will be unnecessary. On the other hand, if the indirect aids do not prove sufficient, the need of the direct aid is incontestably proved and the wisdom of its provision is confirmed.

The bill differs from any other merchant marine bill that has ever been introduced. In 1916 Congress provided for the permanent existence of a bi-partisan, non-sectional board to care for and further the country's maritime interests. This board is in close touch with the conditions affecting the country's merchant marine, and has a more intimate knowledge of special needs and exceptional circumstances arising in connection therewith than could be acquired by any body of men not giving their whole time and effort to the one subject. Because of this and in order to overcome the inflexibility of measures rigidly limited by statutes, the bill gives this board the right to adjust, within certain limits, the prescribed rates of compensation to meet changed conditions, or special situations. It is this feature which makes the proposed bill a living thing, sensitive and capable of delicate attunement to the country's needs. No legislation is possible which could foresee all occurrences or could insure that proper development was attained in every type of ship and in all geographic localities, without at the same time creating the possibility of unduly favoring certain types, or certain localities.

### No Abuse of Discretion

This delegation of a limited discretion to the board cannot lead to abuses; the exercise of its power to alter the rate of compensation or to refuse compensation altogether can only be by a vote of five members, a number which insures against political division or sectional privilege. If in its administration the board errs on the side of conservatism, the desired results will not be attained and it will be patent that greater aid must be extended. If, on the other hand, the error is one of liberality, or if conditions alter to make over-bountiful an originally moderate provision, an automatic check guards against profiteering.

In any year when the profits of a fleet exceed 10 per cent—and the bill is very explicit as to the method of computing profits, so that there can be no concealment, or fraud due to over-capitalization or to unequal distribution of expenses of subsidiaries—the excess is divided with the government until the entire amount of compensation has been returned to the treasury. This is no guarantee of profits. When losses occur they are borne entirely by the individual. The measure simply provides that no aid shall be paid to a fleet of ships not in need of the aid. Because the compensation is re-captured in any year in which the profits exceed 10 per cent, the actual average profits over a period of years will probably be much below this 10 per cent, for in shipping, as is well known, profitable years alternate with periods of losses. The administration feels that no better scheme can be devised for insuring protection where such is needed, yet guaranteeing the taxpayers against any outlay in support of fleets for which such outlay is unnecessary.

### Loan and Tax Funds

The loan fund and the tax exemptions are available for investment only in vessels of approved type built in American shipyards. The workings of these provisions to insure the maintenance of our essential shipbuilding industry will probably give the country a return infinitely greater than the possible loss by lending at a low interest rate or by waiving of income tax. The provision for co-ordinating rail and water facilities will do much to make the shipment of our goods to foreign markets a simple and direct procedure, controlled by hands entirely American. We believe that an allotment of the immigration traffic will assist passenger vessels upon the Atlantic, while the eventual taking over of the transport services will guarantee adequate transportation facilities on the trans-Pacific routes. The tax exemption for shippers who pay freight charges to American ships will assist the newly organized American lines to overcome inertia and to secure volume of business in competition with long established foreign companies firmly entrenched in the field.

The direct aid itself is comparatively slight. It is intended to compensate in part for the difference in building ships in American yards, and for manning and operating them under the American flag. The amount that a ship receives is based upon three factors: size, speed and distance covered. The sliding scale for speed is designed to induce especially the construction of those higher types of ships which are so needed in wartime as auxiliaries, which in peace receive first preference from shippers and travelers, and which our merchant marine so seriously lacks.

### Direct Aid for Americans Only

Direct aid is only payable to steamship companies three-fourths of whose stock is owned by Americans, three-fourths of whose tonnage flies the American flag, and two-thirds of whose crews are composed of American citizens. In consideration of such direct aid the ships are to carry all mails except parcel post free of charge and are to be subject to requisition in any national emergency upon the payment of their normal, fair values instead of values inflated by reason of the emergency which prompted their requisition. In addition to being built in American yards, ships to receive aid must be classed by the American Bureau of Shipping; must perform all possible repairs in American ports; and must directly assist American trade by operating at reasonable intervals between the United States and foreign ports, or distant possessions of the United States, or must act as feeders for our foreign trade.

An example of the relatively moderate amount of aid proposed as well as the need of the Shipping Board's power of increasing that aid can be found in the case of the Oceanic Steamship Company. This line, operated from San Francisco to Sydney, received under the Ocean Mail Act of 1891, a postal subvention amounting to about $85,000 per ship per year. The same vessels, under the Merchant Marine Act of 1922, would only receive $60,000 per ship per year were it not that the board has the right to double this amount. The compensation received under the Act of 1891 was insufficient to induce their continued operation.

### A $50,000,000 Annual Loss

The Shipping Board is running at an annual loss of approximately $50,000,000 a year. The great part of this loss is due to the operation of the 437 ships which it is at present maintaining upon essential trade routes. Under the aid proposed in the Merchant Marine Act, the same ships, if operated by private initiative, would cost the government in direct aid but $8,500,000. By granting this direct aid the country not only would realize from the sale of these ships, but would also insure the continuance of adequate services at only a small fraction of what it is costing to maintain those services under government ownership.

Without aid it has been proved that the government fleet can find no buyers. Without aid the government will be obliged either to junk the fleet and thereby derive nothing from its great wartime expenditure, or to continue to operate at the present staggering losses until the ships are worn out, by which time the privately-owned American fleet will be also eliminated through the competition of its government. Without aid our shipyards will decay; our seafarers will seek other pursuits; our steamship organizations will be scattered. We will again be dependent upon foreign nations for the carriage of those exports on whose marketing our prosperity depends.

National opinion and national economy urge that the government dispose of its fleet and retire from the business of shipowning; national prosperity and national safety imperiously demand that the country maintain and develop an adequate merchant marine. In the Merchant Marine Act of 1922, the administration sees the only means of complying with both these. We will possess such combatant ships as treaty limitations will permit us, but because of lack of auxiliaries our fleet will be impotently bound to our shores and our naval strength will be but a paper figment.

### By Robert Dollar, president, Robert Dollar Company

THIS is certainly an interesting subject, and about which no man can do more than guess. As that guess depends on what Congress will do, and as they do not know that themselves, how can the ordinary mortal give any opinion?

On one point they seem to be decided: that is, to leave intact on the statute books every law that effectively put all American cargo ships out of the foreign trade. Just as surely as those laws succeeded in years gone by, so now they will surely drive every American cargo ship out of the foreign trade.

If the subsidy bill ever becomes a law, it will only help a little, but at this writing it looks as if it will go the way of previous subsidy bills.

A short time ago, while in conversation with the biggest American shipowner and operator, I asked him to tell me candidly what he thought of the situation. He replied that in looking at it closely he could see no more daylight than when looking into the blackest midnight darkness, in which I had to agree.

This opinion coming from two men actively engaged in foreign trade, who of necessity must be optimists or they would not be in that business, is certainly discouraging in the extreme.

### By H. F. Alexander, president, Pacific Steamship Company

I HARDLY know what to say; there has already been so much talk about the Merchant Marine Act and so many different views aired that there is hardly anything new that can be brought out. We, of course, want to see this subsidy bill passed as the first step toward putting the American merchant marine upon the Seven Seas. Personally, I believe if they would revise the navigation laws to conform with the British Board of Trade rules, repeal the Seamen's Act and change our tonnage measurements to conform with those of foreign vessels, we would get further ahead. All we need is to be placed upon a parity with the foreign owners with regard to rules, regulations and measurements. If, in addition to this, they will bring the Philippines under the ooastwise laws and make provision for substantial mail contracts, we will not need any mileage subsidy.

I am afraid, however, that Congress is not in the mood to change our laws to equalize conditions with the foreign nations, and, if this is the case, we must have a subsidy to offset these disadvantages. Accordingly, I am strongly in favor of the passage of the subsidy bill as the first step in the right direction; but we must not let it end there; we must keep at it until we have the laws amended to put us upon a parity with our foreign competitors.

### By J. O. Davenport, shipowner

IF there is any maritime nation in the world that should have a ship subsidy, that nation is the United States of America; first, in order to keep up the standard of wages and maintenance and so induce able men, physically and mentally, to take to the sea; second, to realize on the huge investment, governmental and individual.

The paramount issue at Washington is "The Merchant Marine Act, 1922", or Subsidy Act, not only to shipowners, exporters and importers, but to the general public as well, for there is nothing surer than the latter's paying through taxation the great cost of $3,500,000,000 standing against our great fleet of freighters and passenger ships, if the Subsidy Act fails to pass. There may be some salvage, but it is difficult to see how there can be much, if vessels operated at a loss without subsidy, and if the vessels are returned to the Shipping Board, the charterers of bare vessels or buyers being unable to make due payments. Depreciation of idle vessels is very rapid.

The Subsidy Act in its main features, direct and indirect, will avert all this. It is imperative that Congress, representing the entire people, come to the aid of our merchant marine with government compensation for extra cost of manning and operating American ships as against foreign bottoms. Our scale of wages and sustenance of crew is much higher, and no relief is to be anticipated in that direction. This is true of other items of expense pertaining to operation of American vessels engaged in foreign trade.

For several decades the fact that there was no merchant marine had been deplored by Americans, more especially in 1898 and 1914-1918. If the great need of troop ships and freighters during the short but decisive Spanish-American War has been forgotten, surely the emergency of no ships for the European War is still remembered.

It is not the purpose of this article to give statistics. Able writers have given to those interested enough to "read up", facts and figures that cannot be controverted.

The exigencies of the world's greatest war found us at its termination with a merchant marine. This we have, but the Subsidy Act must be passed or the merchant marine cannot be retained. Government management of vessels in foreign trade is a failure. If sold to be operated under the American flag, there must be a subsidy to overcome numerous handicaps, and be it understood there are many besides difference in wages of the personnel aboard ship. If sold to individuals or corporations, stock must be subscribed for or bonds purchased, and this feature should not be confined to the seaboard; money should be found a-plenty, even from the Middle West, to finance legitimate concerns taking over government ships when new legislation makes the investment safe and profitable. Then through trade associations return cargoes can and should be arranged, for there is no profit on low freights without two-way loads; too much emphasis cannot be placed on this point. High freights are a thing of the past, and it is a foregone conclusion that low rates will prevail for some time to come on ocean-going vessels, with competition keen.

The wooden vessels are eliminated and perhaps never should have been built, but those of steel construction are good vessels, especially the freighters of the 8800-ton deadweight capacity type, which comprises by far the greater part of the government-owned fleet in the merchant marine. The government is anxious to sell; citizens of the United States are ready to buy at a fair valuation. It now remains for Congress to make that possible by enacting laws to encourage the successful operation of an American merchant marine adequate, at least, to carry on the commerce of the United States and its possessions.

### By H. H. Raymond, president, Clyde, Mallory and other lines

EITHER this present bill must be promptly enacted, or the United States in defiance of sound business and in defiance also of the instinct and conviction of the vast majority of its own citizens, will be committed to a policy of government ownership and operation in the shipping business, and worse than that, to a policy of governmental subsidized competition with American private capital and enterprise. Such an unjust policy as this would not be tolerated for a moment by manufacturing. It would not be tolerated by agriculture. It should not be imposed on the merchant marine.

In asking for the enactment of this present bill, we do so in the deep conviction that American shipping, properly aided and encouraged by the nation, will render a far more loyal service to the manufacturers, merchants, farmers, exporters and importers of this country than can or will the ships of foreign nations, our rivals in trade or possible enemies in war. Every other maritime government in the world, our own excepted, has spared no effort and no cost to make certain that a delivery service by its own ships and seamen and under its own flag is provided for the greater part of its own sea-borne commerce. That delivery service becomes an indispensable weapon of defense in a national emergency. This truth the great world-war indelibly impressed on the whole American people, when the imperative need of "ships and more ships" involved us in a vast emergency expenditure of three and a half billion dollars, two-thirds of which could have been saved if there had been adequate national aid to American shipping and shipbuilding in the years before 1914.

We ask for the enactment of this bill so that never again may our country be taken unprepared on the sea and forced to pay another such heavy price of national blunders.

We have studied the indirect aids of the present bill: the reserving of 50 per cent of the immigration to American ships; the exemption from Federal taxes conditioned on building of new ships; the 5 per cent income tax deduction to shippers in American vessels; the construction loan fund; the more liberal allowance for depreciation; the transfer of army and navy transport service to the merchant marine; and the provision of the law of 1920 for the coastwise extension to the Philippines. All of these aids are well considered. All are valuable and welcome. They will serve together to offset certain handicaps against us or advantages already possessed by our competitors. But we are absolutely convinced by our consideration of the bill that these indirect aids themselves will not suffice. We are convinced also that neither will the direct aids themselves suffice. There must be both indirect and direct assistance to make sure of giving the American people what they desire, and that is a genuinely fair chance and fair play for our ocean ships and seamen. This bill as a whole must be made a law to meet the present need and satisfy the expectations of the country.

What is more, the present rate of compensation for the cargo vessels of below thirteen knots speed must be advanced. We have made a thorough study of the proffered rate of ½ of 1 cent per gross ton per hundred miles. For all but the largest ships it is manifestly insufficient, and will fall short of achieving its express purpose of compensating for the difference in wage and subsistence cost between American cargo ships and like ships of our principal competitor.

### By E. C. Plummer, commissioner, Shipping Board

AMONG the absolute essentials to success in foreign markets are not merely the goods produced and properly prepared for foreign distribution, but the assurance of prompt and certain deliveries—and deliveries by those who are our friends and not the representatives of our competitors. This means that we must have ships—American ships on which we and our customers can travel, express ships by which quick freight transportation may be assured, and those great cargo carriers that can cheaply deliver the bulky products of which this country produces so vast an amount.

Nearly four thousand million dollars of the people's money, raised largely through Liberty Bonds, have been invested in American built ships. Proper government assistance will make these ships useful to Americans, will put them into private hands where they may be economically operated for the benefit of all of our people, and will restore this country to the high maritime position it held prior to the Civil War. Without such government assistance this tremendous investment in floating property must become in effect a total loss, as soon as the few ships now in operation are worn out.

The government is under an annual expense of nearly $50,000,000 on account of these ships.

The mere operation of these ships would give constant, well-paid employment to 75,000 men, and as many more men would be employed making repairs and replacements. Ships call upon almost all kinds of industries for labor and materials.

Ships in our foreign trade always create enlarged markets for American products. Our business with those South American countries, secured by Shipping Board lines, shows up more than twice as great for the first five months of this year just completed as for the corresponding period last year.

These ships protect the American from excessive freight charges and other handicaps, as was so completely shown in the Egyptian cotton case.

They are absolutely necessary as an adjunct to our navy.

# A DIGEST OF THE MERCHANT MARINE ACT, 1922

THE following is a brief digest, by titles and sections, of H. R. 12,021, the Ship Subsidy Bill, as introduced by Representative Greene after the conclusion of hearings and as reported and amended by the House committee on the merchant marine and fisheries:

**Title I—Amendments to Merchant Marine Act, 1920.**

Section 1—Grants the Shipping Board greater discretionary power in selling vessels.

Section 2—Provides that vessels shall be sold to or operated by persons having support of interested communities. Declares against monopoly.

Section 3—Creates a revolving loan fund of $125,000,000 as against one of $25,000,000 created by the Act of 1920.

**Title II—Taxation.**

Section 201—Amends Revenue Act of 1921 as to exemption from income tax of earnings of vessels in foreign trade. Double the tax exemption must be invested in new construction. Proceeds of sales of vessels launched before January 1, 1914, exempt from tax on gain in value if money is invested in new construction.

Section 202—Clerical changes in Revenue Act of 1921.

Section 203—Shipping Board empowered to make regulations for income tax deductions on account of depreciation of vessels. Extraordinary depreciation of vessels bought during war-time allowed.

Section 204—Five per cent of freight money paid to an American vessel in foreign trade may be deducted from income tax.

Section 205—Excludes direct aid (subsidy) from taxable income.

Section 206—Doubles tonnage taxes with some exceptions.

**Title III—Transportation of immigrants by water.**

Section 301—As nearly as practicable, one-half of the immigrants to the United States to be transported in American vessels.

Section 302—Regulations to be made by commissioner general of immigration.

Section 303—President given discretionary powers as regards foreign vessels.

Section 304—Defines term "United States".

**Title IV—Compensation to vessels of the United States.**

Section 401—Definition of terms employed.

Section 402—Creates "Merchant Marine Fund".

Section 403—Manner of making contracts, for what periods, etc.

Section 404—Amount of compensation. Extra compensation for speed begins at 12 knots instead of 13.

Section 405—Definitions of power-driven vessel, sailing vessel, gross tonnage; how speed shall be ascertained, etc.

Section 406—Specifies what vessels shall not receive compensation. All vessels must be classed by American Bureau of Shipping. During the first year, they must carry crews one-half of which, exclusive of officers, are American citizens; second year, six-tenths; thereafter, two-thirds. Remainder in all cases must be eligible to American citizenship, except that, in the case of passenger vessels, provision applies only to deck and engine crews.

Section 407—"Foreign trade" defined.

Section 408—When tramps and feeders are entitled to compensation.

Section 409—Ownership of vessels by citizens of the United States.

Section 410—Shipping Board may increase or decrease compensation.

Section 411—Contracts may require maintenance of service or route.

Section 412—Vessels receiving compensation may be requisitioned or purchased by the United States, to be paid for on basis of fair actual value, but "in neither case shall such fair actual value be enhanced by the causes necessitating the taking".

Section 413—Repairs, etc., of compensated vessels, aside from emergency work or work on feeders, to be made in the United States.

Section 414—Compensated vessels must carry mail, except parcel post, free.

Section 415—Compensation ceases on sale, unless new contract is made.

Section 416—Vessels sold prior to expiration of contract remain subject to Section 412.

Section 417—General provisions for repayment of compensation when net income exceeds 10 per cent. This section is too long and involved to be summarized and should be read in full by those interested.

Section 418—Obligations of owners: must comply with Sections 412, 413, 414, 415 and 417; owner may cancel without consent of board, but remains liable under Sections 412 and 417, as well as 411 if he has agreed to operate in given trade; what terms the board may prescribe.

Section 419—General accounting office may not review board's determination of compensation.

**Title V—Army and Navy transports.**

Section 501—President may order discontinuance of services; secretaries of war and the navy directed to make contracts with commercial lines.

**Title VI—Rail and water transportation.**

Section 601—Definition.

Section 602—Shipping Board and Interstate Commerce Commission to create joint board.

Section 603—Board to make export bills of lading.

Section 604—Permits rail-owned vessels to engage in foreign and Philippines trade. This section is designed to clear up any confusion existing as regards Section 5, Interstate Commerce Act.

Section 605—Amends Section 15, Shipping Act of 1916. Covers agreements between carriers affecting water transportation. Provides for forced cancellation of agreements between railroads and steamship lines.

Section 606—I. C. C. may require railroads to extend to any or all steamship lines arrangements made with one line.

Section 607—Amends Section 28, Merchant Marine Act, in order to permit the board and commission to suspend its operation if both believe enforcement would result in changing channels of trade.

**Title VII—Miscellaneous provisions.**

Section 701—Officials and employes of the United States to travel by American vessels when practicable.

Section 702—Government supplies to be carried in American vessels when practicable.

Section 703—Board empowered to make necessary regulations for enforcing act.

Section 704—Invalidity of one portion shall not affect others.

Section 705—Short title: "Merchant Marine Act, 1922".

# A RECORD OF VANISHED VESSELS

## The Ships of the Famous "California Fleet" of the '50s and '60s—Their Names, Where and When Built and Their Final Ends

By F. C. MATTHEWS

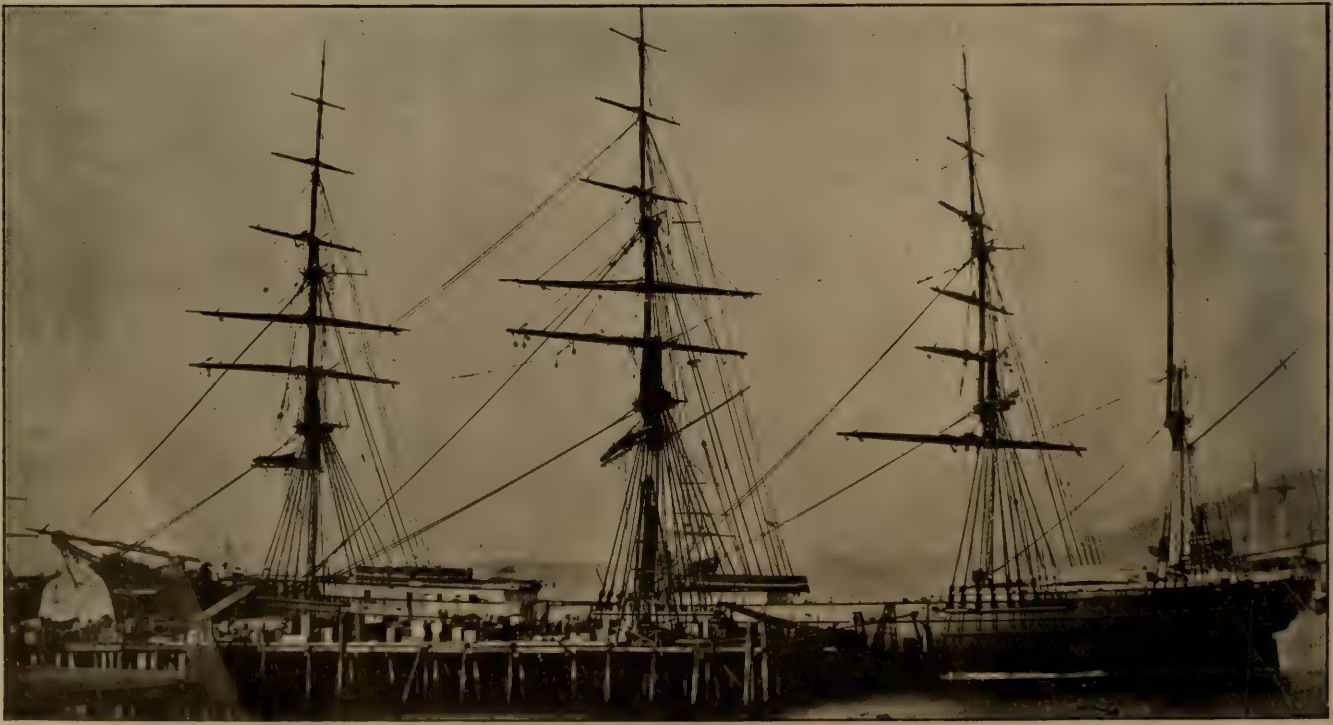
WHO, having any connection with maritime matters, has not frequently heard such expressions as these: "Yes, I remember the ship well; wonder what became of her?"; "She was a beauty and a flyer; so-and-so came out in her one trip; what happened to her? Do you know?" And how often has the interrogated person been able to give a satisfactory reply? So far as we have been able to ascertain after considerable investigation, no attempt has been heretofore made to compile anything pretending to be a complete list or table of the vessels that comprised what was known the world over as the California Fleet and particularly as to what ultimately became of them. Practically all of the clipper ships built in the United States were members of this fleet and the greater number of vessels in the following list were of either clipper or semi-clipper model. Inasmuch as no ships of this description were built after the 50's and but few ships of any type for this particular trade were launched during the 60's, it has been considered advisable to limit our table to such vessels as were built not later than the year 1860. Some of those named will be recognized as having operated well into the 70's, a few even into the 80's. No effort has been spared to obtain authentic information, hearsay reports not being used until confirmed, and it is believed that the table will be found worth preserving in maritime scrap-books as a matter of historical interest.

## The "California Fleet"—Part I

| Name | Tons | Built at | Year | Remarks |
|---|---|---|---|---|
| A. M. Lawrence | 593 | Baltimore | 1850 | As Br. bk. Wellington condemned and sold at Apia, April, 1878. |
| Adelaide | 1693 | New York | 1854 | As Br. sh. of Liverpool lost about 1875. |
| Alarm | 1184 | Boston | 1856 | Akyab-Singapore; abandoned, sinking, after striking reef, 1863. |
| Alboni | 917 | Mystic | 1852 | Sold 1862, becoming German sh. Elise Ruger. |
| Alert | 764 | Damariscotta | 1851 | Sold at Calcutta, 1857. |
| Alexander | 592 | Medford | 1852 | As Br. sh. wckd. in Sts. of Rhio on voy. Liverp'l-Singapore, 1863. |
| Andrew Jackson | 1679 | Mystic | 1855 | As Br. sh. wrecked in Straits of Gaspar, December, 1868. |
| Anglo Saxon | 868 | Rockland, Me. | 1853 | Liverp'l-N. Y.; captured by Florida and burned, August, 1863. |
| Antelope | 1187 | Williamsburg, L.I. | 1852 | Sold 1863, becoming Br. sh., of Cape Town. |
| Antelope | 587 | Medford | 1851 | Bangkok-Hongkong; lost on Paracels Reef, August, 1858. |
| Aramingo | 716 | New York | 1851 | Sold 1863, becoming German sh. Matador. |
| Archer | 905 | Somerset | 1852 | As American bark, New York-Havre, found'd. February, 1880. |
| Architect | 520 | Baltimore | 1847 | Reported lost about 1856. |
| Arey | 1129 | Frankfort, Me. | 1856 | Sold 1863; renamed Nautilus, of New York. |
| Argonaut | 575 | Medford | 1849 | Sold 1864 and went under Swedish flag. |
| Asa Eldredge | 1178 | Boston | 1856 | Burned at Valparaiso 1879; sold; rep'd, became Br. sh. Norfolk. |
| Aspasia | 632 | Mystic | 1856 | Sold at London, 1863; reported lost prior to 1870. |
| Asterion | 1135 | Medford | 1854 | Lost on reef at Bakers Is. with her guano cargo, Sept., 1863. |
| Atalanta | 1288 | Baltimore | 1852 | Sold 1856, becoming Spanish ship Marguerita. |
| Atalanta | 867 | Amesbury, Mass. | 1850 | As coasting-bark, foundered off Cape Flattery, December, 1890. |
| Atmosphere | 1485 | Mystic | 1856 | Havre-Liverpool, 1871; missing. |
| Audubon | 582 | Fairhaven, Mass. | 1846 | Singapore for N. Y., via Batavia; burned at Batavia, 1859. |
| Audubon | 900 | Chelsea | 1859 | From San Francisco via Hongkong; wrecked near Manila, 1868. |
| Aurora | 1396 | Chelsa | 1853 | Sold 1863 and went under British flag. |
| B. F. Hoxie | 1387 | Mystic | 1855 | Mazatlan-Falmouth; capt'd by Florida and burned, June, 1863. |
| Bald Eagle | 1708 | Boston | 1852 | Hongkong-San Francisco, October, 1861; missing. |
| Barreda Brothers | 770 | Boston | 1854 | Sold 1862, becoming British sh. Earl Canning, of Liverpool. |
| Belle of the Sea | 1255 | Marblehead | 1857 | Sold 1864, becoming British sh. Strathpeffer. |
| Belle of the West | 936 | Dennis, Mass. | 1853 | As Fiery Cross, of Calcutta, foundered in Bay of Bengal, 1868. |
| Belvedere | 1321 | Boston | 1857 | As coasting bark, foundered off Cape Flattery, December, 1886. |
| Benjamin Howard | 650 | Camden, Me. | 1851 | Sold 1855, becoming Danish sh.; later went under British flag. |
| Beverly | 676 | Medford | 1852 | Sold 1863; renamed Argonaut, of Boston; later bec. Br. ship. |
| Black Hawk | 1108 | New York | 1857 | Sold about 1884, going under German flag. |
| Black Prince | 1050 | Newburyport | 1854 | San Francisco-Boston; found'd in No. Atlantic, February, 1865. |
| Black Sea | 792 | Greenport, L. I. | 1855 | Sold 1862, becoming British sh. Jupiter, of London. |
| Black Warrior | 1828 | Damariscotta | 1853 | Sold 1862, becoming British sh. City of Melbourne. |
| Bonita | 1127 | Boston | 1853 | Condemned at Algoa Bay, 1857. |
| Boston Light | 1164 | Boston | 1853 | Sold 1862, becoming British sh. Tulja, of Bombay. |
| Bostonian | 1100 | Boston | 1854 | New York-London; lost on Island of Guernsey, January, 1861. |
| Brewster | 985 | Newburyport | 1855 | Sold 1877, becoming Norwegian sh. Fama. |
| Buena Vista | 547 | Newbury, Mass. | 1848 | As coasting bark, broken up at San Francisco, 1883. |
| Caricoa | 502 | Kensington, Pa. | 1851 | Sold 1863, going under Italian flag. |
| Caroline Read | 686 | Swansea, Mass. | 1848 | As coasting bark, broken up at San Francisco. |
| Carrier Dove | 1694 | Baltimore | 1855 | Liverpool-Tybee, Phila. and S. F.; lost at Tybee, March, 1876. |
| Carrier Pigeon | 1370 | Bath | 1852 | Boston-S. F.; lost June, 1853, at (since called) Pigeon Pt., Cal. |
| Celestial | 860 | New York | 1850 | Sold 1858, going under Spanish flag. |
| Celestial Empire | 1630 | Boston | 1852 | Bremen-N. Y.; abandoned in sinking condition, February, 1878. |

| Name | Tons | Built at | Year | Remarks |
|---|---|---|---|---|
| Challenge | 2006 | New York | 1851 | As Br. sh. Golden City, lost on coast of France about 1876. |
| Challenger | 1334 | Boston | 1853 | As Peruv. sh. Camille Cavour, Pug. Sd.-Callao; aband. Oct., '75. |
| Channing | 800 | New York | 1853 | Wrecked at Keelung, August, 1857. |
| Charger | 1169 | Portsmouth | 1856 | Manila-Boston via Cebu; lost near Cebu, December, 1874. |
| Chariot of Fame | 1573 | Boston | 1853 | Chincha Islands-Cork; abandoned January, 1876. |
| Charmer | 1055 | Newburyport | 1854 | Sold 1863, going under British flag. |
| Clarendon | | | | Sagua la Grande-New York; lost near Key West, May, 1858. |
| Cleopatra | 1562 | Boston | 1852 | Callao-Hampton Rds.; aband'd in So. Atlantic after coll'n, '65. |
| Climax | 1051 | Medford | 1853 | Stranded at Callao, 1855; sold and cont'd as Antonia Terry. |
| Coeur de Lion | 996 | Portsmouth | 1854 | Sold 1862 to Russians; was later Swedish bark Zaritza. |
| Comet | 1836 | New York | 1851 | As Br. sh. Fiery Star, New Zealand-London, burned April, '65. |
| Competitor | 871 | Medford | 1853 | As Swedish bk. Edward, lost in Baltic Sea about 1900. |
| Conquest | 1054 | Medford | 1855 | Boston-New Orleans; lost on Harbor Island, December, 1865. |
| Contest | 1150 | New York | 1852 | Yokohama-N. Y.; captured by Alabama and burned, Nov., 1863. |
| Coringa | 777 | Medford | 1851 | Reported sold foreign about 1874. |
| Corinne | 767 | Barneysville | 1852 | Reported lost late '50's. |
| Courier | 382 | Newbury, Mass. | 1842 | San Francisco-Rio de Janeiro; lost on Falkland Is., May, 1854. |
| Courser | 1026 | Boston | 1851 | Hongkong-New York; wrecked on Pratas Shoals, April, 1858. |
| Criterion | 1546 | Damariscotta | 1855 | Sold to Moravia about 1883. |
| Cyclone | 1109 | Boston | 1853 | Sold 1863, becoming British sh. Avon. |
| Daring | 1095 | Newburyport | 1855 | Bakers Is.-Europe; condemned and sold at Valparaiso, 1865. |
| Dashing Wave | 1239 | Newburyport | 1853 | As barge, wrecked on Alaskan coast, 1920. |
| Dashaway | 1012 | Hallowell, Me. | 1854 | Sold 1863, becoming British sh. Mauritius Merchant. |
| Dauntless | 791 | Medford | 1852 | Boston-Valparaiso, 1853; missing. |
| David Brown | 1715 | New York | 1853 | S. F.-Liverpool; foundered in North Atlantic, January, 1861. |
| David Crockett | 1676 | Mystic | 1853 | Sold at Phila. for conversion into barge, Sept., '90; later lost. |
| Defender | 1413 | Boston | 1855 | Puget Sound-Sydney; lost on Elizabeth Reef, So. Pacific, 1859. |
| Defiance | 1695 | Rockland, Me. | 1852 | Condemned at Canary Is., 1856; sold; became Span. sh. Teide. |
| Derby | 1094 | Chelsea | 1855 | Sold 1876, going under German flag. |
| Dictator | 1293 | Robbinston, Me. | 1855 | Liverp'l-Hongkong; captured by Georgia and burned, Apr., '63. |
| Don Quixote | 1429 | Medford | 1853 | Sold 1864, becoming French sh. Saint Aubin, of Havre. |
| Dreadnaught | 1227 | Newburyport | 1854 | Liverpool-San Francisco; lost on Tierra del Fuego. |
| Eagle | 1296 | New York | 1851 | Sold 1863, becoming British sh. Turkey, of Calcutta. |
| Eagle Wing | 1174 | Medford | 1854 | Boston-Bombay, 1865; missing. |
| Eastern State | 813 | Frankfort, Me. | 1851 | Sold 1867 and went under British flag. |
| East Indian | 897 | Newburyport | 1856 | Sold at Calcutta, 1863, and went under British flag. |
| Eclipse | 1250 | Williamsburg, L.I. | 1850 | Lost near San Blas, October, 1853. |
| Edwin Forrest | 1144 | Boston | 1853 | New York-Hongkong, 1863; missing. |
| Electric Spark | 1190 | Medford | 1855 | Liverpool-San Francisco; lost on the Irish Coast, Sept., 1869. |
| Eli Whitney | 532 | Medford | 1834 | Australia-S. F.; into Papeete in distress; burned there, 1870. |
| Eliza F. Mason | 522 | Baltimore | 1852 | Sold 1863, becoming Chilean bark Emanuel. |
| Elizth. F. Willetts | 825 | Mystic | 1854 | Sold at Shanghai, spring of 1864. |
| Elizabeth Kimball | 997 | Beverly | 1853 | Puget Sound-Iquique; lost at Easter Island, May, 1873. |
| Ellen Foster | 996 | | 1852 | Puget Sound-Callao; lost at Neah Bay, December, 1867. |
| Empress of Seas | 2200 | Boston | 1853 | Burned at Queenscliffe, December, 1861. |
| Endeavor | 960 | Boston | 1856 | Burned in Japan in late 70's. |
| Enoch Train | 1617 | Boston | 1854 | Sold about 1870, becoming British sh. of Port Glasgow. |
| Eureka | 1041 | New York | 1851 | Sold and went under British flag; condemned at Calcutta, '66. |
| Europa | 849 | Salem | 1855 | Sold about 1863, becoming Holland sh. A. M. E., of Amsterdam. |
| Euterpe | 1984 | Rockland, Me. | 1854 | Abandoned at sea about 1871. |
| Expounder | 1035 | Charlestown | 1856 | Converted into schooner about 1886. |
| Fair Wind | 1299 | Boston | 1855 | Sold early 60's and went under British flag. |
| Fearless | 1183 | Boston | 1853 | Sold 1878, becoming Norwegian bark Johanne. |
| Fleetwing | 912 | Medford | 1854 | As British bark, condemned at Melbourne, 1885. |
| Fleetwood | 666 | Portsmouth | 1852 | Boston-Honolulu; struck iceberg off Horn and sank, May, '59. |
| Flora Temple | 1915 | Baltimore | 1853 | Macao-Havana, with coolies; sank in China Sea; 868 lives lost. |
| Flyaway | 1274 | New York | 1853 | Sold 1858, bec. Span. bk. Concepcion; later Br. bk. Bothalwood. |
| Flying Arrow | 900 | Frankfort, Me. | 1852 | Dismasted near Melbourne, '55; sold; bec. Wings of the Wind. |
| Flying Childers | 1125 | Boston | 1852 | Sold at London, 1863. |
| Flying Cloud | 1782 | Boston | 1851 | As Br. sh. strd. at St. Johns, N. B., '74; burned for metal, '75. |
| Flying Dragon | 1127 | Bath | 1853 | Entering S. F. hbr., struck on Arch Rock and sank, Dec., '61. |
| Flying Dutchman | 1257 | New York | 1852 | S. F.-N. Y.; wrecked on New Jersey coast, February, 1858. |
| Flying Eagle | 1004 | Newcastle, Me. | 1852 | Condemned at Mauritius, October, 1879, and sold. |
| Flying Fish | 1505 | Boston | 1851 | As Span. sh. El Bueno Suceso, foundered in China Sea. |
| Flying Mist | 1184 | Medford | 1856 | From Greenock; wrecked at Bluff Harbor, N. Z., Aug. 26, 1862. |
| Flying Scud | 1713 | Damariscotta | 1854 | Sold 1863, becoming British sh. Cestrian. |
| Franklin | 1124 | Boston | 1858 | Sold and went under German flag as Heinrich and Tonio. |
| Frigate Bird | 567 | Baltimore | 1853 | Sold 1863 and went under British flag; later was Norw. bark. |

| Name | Tons | Built at | Year | Remarks |
|---|---|---|---|---|
| Galatea | 939 | Charlestown | 1854 | Sold 1882, went under Nrwg. flag; later con'd. Cape Good Hope. |
| Game Cock | 1119 | Boston | 1850 | Condemned at Cape of Good Hope, February, 1880. |
| Gauntlet | 2031 | Richmond, Me. | 1853 | Sold 1861, becoming British sh. Sunda. |
| Gazelle | 1244 | New York | 1850 | Dismasted on China Coast; sold, becoming Peruv. sh. Cora. |
| Gem of the Ocean | 629 | Medford | 1852 | As coasting bark, wrecked on Vancouver Island, Aug., 1879. |
| George Peabody | 1562 | Medford | 1853 | New York-S. F.; condemned at Valparaiso, May, 1881. |
| George Raynes | 999 | Portsmouth | 1852 | Reported sold foreign after 1865. |
| Gladiator | 650 | New York | 1835 | Sold 1865, becoming Norwegian sh. Yara Yara, of Arendal. |
| Goddess | 1126 | Medford | 1855 | Sold 1864, becom'g Norw. sh. Nordens Dronning, of Stavanger. |
| Golden City | 810 | New York | 1852 | As Br. bk. Tokatea, lost Dec., 1879, on voyage Sydney-Honolulu. |
| Golden Eagle | 1120 | Medford | 1852 | Howlands Is.-Cork; captured by Alabama and burned Feb., '63. |
| Golden Fleece | 968 | Boston | 1852 | Beating out of S. F. harbor, wckd. outside Fort Point, Apr., '54. |
| Golden Fleece | 1475 | Boston | 1855 | New York-San Francisco; condemned at Montevideo, 1877. |
| Golden Gate | 1349 | New York | 1851 | New York-Bombay; burned at Pernambuco, May, 1856. |
| Golden Light | 1140 | Boston | 1852 | Boston-S. F.; struck by lightning and burned, February, 1853. |
| Golden Racer | 837 | Thomaston | 1852 | Wrecked in River Min, April, 1857. |
| Golden State | 944 | New York | 1852 | Condmd at Rio,'83; sold; as Arg. bk. Anna C. Maguire, wckd,'86. |
| Golden West | 1443 | Boston | 1852 | Sold 1863, becoming British sh. of Liverpool. |
| Good Hope | 1060 | Medford | 1855 | As Swed. sh. Solide, ashore, total loss, near Quebec, Nov., '81. |
| Governor Morton | 1430 | Somerset, Mass. | 1852 | Burned at Beaufort, July, 1877, while loading for England. |
| Grace Darling | 1042 | Boston | 1854 | Puget Sound-San Francisco; missing, January, 1878. |
| Great Republic | 3337 | Boston | 1853 | As Br. sh. Denmark, Rio-St. Johns, found'ed in No. Atlantic. |
| Grey Feather | 586 | Eastport, Me. | 1850 | Sold about 1863, becoming German sh. Ida, of Bremen. |
| Greyhound | 538 | Baltimore | 1848 | Sold 1856 and went under Chilean flag. |
| Guiding Star | 963 | Newburyport | 1853 | Hongkong-S. F.; put back in distress; condemned, 1870. |
| Haidee | 395 | Providence | 1854 | As slave ship, scuttled and sunk off Montauk, September, 1858. |
| Harriet Hoxie | 671 | Mystic | 1851 | Reported sold early '60's. |
| Harvey Birch | 1488 | Mystic | 1854 | Havre-N. Y.; captured by Nashville and burned, Nov., 1862. |
| Haze | 839 | Mystic | 1859 | Sold 1882, becoming German bark of Bremen. |
| Helena | 650 | New York | 1841 | Swatow-Havana, with coolies, autumn 1856; missing. |
| Henry Brigham | 1068 | Medford | 1851 | Original name, Telegraph, which see. |
| Herald of Morning | 1109 | Medford | 1853 | Sold 1870, becoming Norwegian sh.; later, bark. |
| Hesperus | 1019 | Medford | 1856 | At Woosung, just arrived from Liverpool; burned, Jan., 1861. |
| Highflyer | 1195 | Newburyport | 1853 | Wrecked on Formosa, fall of 1856. |
| Hoogley | 1304 | Boston | 1852 | Wrecked, bound up river for Shanghai, August, 1852. |
| Hornet | 1426 | New York | 1851 | New York-San Francisco; burned at sea, May, 1866. |
| Hound | 714 | Mystic | 1853 | Sold at London, January, 1864. |
| Houqua | 585 | New York | 1844 | Yokohama, August, 1864, for New York; missing. |
| Huntsville | 522 | New York | 1831 | S. F.-Coquimbo; lost at Easter Island, January 17, 1871. |
| Hurricane | 1608 | New York | 1851 | Sold abt. 1860, becoming Shaw Allum, of Singapore; fnd'd. 1869. |
| Hussar | 721 | Newburyport | 1852 | Sold at Singapore, November, 1864. |



The clipper ship Great Republic at a San Francisco wharf

| Name | Tons | Built at | Year | Remarks |
|---|---|---|---|---|
| Iconium | 659 | Wiscasset | 1848 | As coasting bark, broken up at San Francisco, 1877. |
| Imperial | 1184 | Boston | 1857 | Sold at Hongkong, 1863, and went under British flag. |
| Indiaman | 1165 | Boston | 1854 | Sold 1863 and went under British flag. |
| Industry | 1138 | Medford | 1858 | Sold 1865 and went under British flag. |
| Ino | 879 | Williamsburg, L.I. | 1851 | Sold 1866; renamed Shooting Star; later, Russian bk. Ellen. |
| Intrepid | 1173 | New York | 1856 | Hongkong-New York; lost on reef near Island of Banca, 1860. |
| Invincible | 1728 | New York | 1851 | Burned at wharf, New York, September, 1867. |
| Isaac Jeanes | 813 | Philadelphia | 1854 | As coasting bark, wrckd. at entrance to S. F. harbor, Mch., '76. |
| Jack Frost | 836 | Kennebunk | 1857 | N. Z.-Melbourne, Feb., '64; missing; th't lost on Stewarts Is. |
| Jacob Bell | 1382 | New York | 1852 | Foo Chow-N. Y.; captured by Florida and burned, Feb., 1863. |
| John Bertram | 1080 | Boston | 1850 | As Norwegian bark, abandoned in No. Atlantic, March, 1883. |
| John E. Thayer | 1918 | Medford | 1856 | Burned at Island of Potos, Gulf of California, September, 1858. |
| John Gilpin | 1089 | Boston | 1852 | Hono-New Bedfd; struck iceberg off Cape Horn, found'd, '58. |
| John Land | 1064 | Boston | 1853 | New York-Newport, England; abandoned March, 1864. |
| John Milton | 1444 | Fairhaven, Mass. | 1854 | Callao-N. Y.; lost with all hands near Montauk Light, 1858. |
| John Stuart | 1653 | New York | 1852 | Sold at Bombay 1863, and went under British flag. |
| John Wade | 640 | Medford | 1851 | Bangkok-San Francisco; lost in Gulf of Siam, March, 1859. |
| Joseph Peabody | 1177 | Boston | 1856 | Sold at London, 1863, becoming Br. sh. Dagmar, of Liverpool. |
| Kate Hayes | 700 | | 1851 | Sold at Callao, Aug., 1854; reported sunk in war with Chile. |
| Kate Hooper | 1488 | Baltimore | 1853 | At Melbourne, from Hongkong; set on fire by crew and burned. |
| Kathay | 1500 | New York | 1853 | Sold foreign, 1863; reported lost at Howlands Islands, 1867. |
| Keystone | 658 | Alma, Me. | 1854 | Sold during 60's and went under French flag, as Fabius. |
| Kingfisher | 1286 | Medford | 1853 | N. Y.-S. F.; cond. at Montevideo, '71; sold; later, Jaime Cibils. |
| King Philip | 1189 | Alma, Me. | 1857 | As coasting bark, lost on beach south of S. F. entrance, 1878. |
| Kit Carson | 1016 | Dennis, Mass. | 1855 | Sunk in Brazilian war, to assist in blockading Rio de Janeiro. |
| Ladoga | 866 | Portsmouth | 1854 | Sold and went under Portuguese flag as bark Zelmira. |
| Lantao | 593 | Boston | 1849 | Caldera-Boston; missing, 1857. |
| Lebanon | 696 | Newburyport | 1847 | Sold 1863, becoming British sh. (later British bk.) of Shields. |
| Levanter | 868 | Newcastle, Me. | 1852 | Sold about 1864, becoming British sh. of Cowes. |
| Lightfoot | 1996 | Boston | 1853 | From Manila; wrecked March 10, 1857, two days out. |
| Live Yankee | 1657 | Rockland, Me. | 1852 | Cardiff-Karachi; lost while mak'g Span. port, in distress, '61. |
| Living Age | 727 | Medford | 1852 | From Woosung, Dec. 28, '54; wckd. on Pratas Shoals, Jan. 1,'55. |
| Lookout | 1067 | Warren, Me. | 1853 | Shanghai-Puget Sd.; lost on Kutsino Is., Japan, Sept. 12, 1878. |
| Lotus | 660 | Chelsea | 1852 | Sold foreign, 1863. |

(To be continued)

# THE MARINE BORER: SOME NEW LIGHT

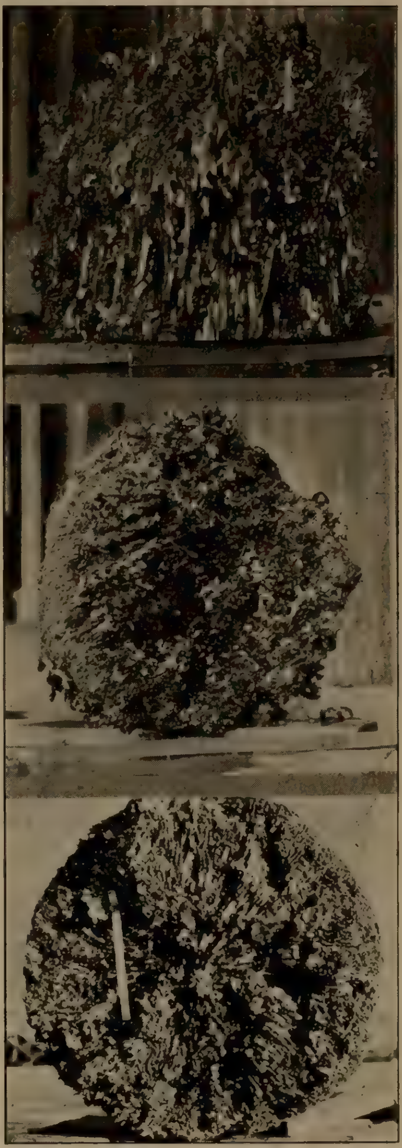
## Work of San Francisco Committee Leads to Complete Reversal of Ideas Regarding the Pest. Neither Fresh Water nor Sewage Immediately Destructive

THE work of the San Francisco Bay marine piling committee is attracting the attention of scientists the world over for its thorough research into the life habits of marine borers and the practical bearing of those habits on the construction of marine terminals. This work is of benefit not only to the waterfront structures of San Francisco Bay and its estuaries but its influence has reached into the harbors of all of our coasts and even into those of northern Europe.

Some 1500 copies of this committee's report have been distributed to every continent on the globe, and it has taken rank among the highest authorities on the subject. This recognition is due in large measure to the biological researches of Professor C. A. Kofoid of the University of California, the results of whose work are held by competent scientists to be the most complete and authoritative ever published in any language in the world.

Some of the conclusions reached in the investigation of marine borers, and especially of the teredo, have caused a complete reversal of the ideas concerning immunity from that pest. During the work of the 1920-1921 season it was determined by scientific experiment that teredo "can continue to feed and function in water of a minimum salinity of five parts per thousand". All of the previous investigations of European scientists and many American investigators had placed the minimum at nine parts per thousand.

Even more important than this determining minimum of salinity was the discovery that the teredo can endure exposure to entirely fresh water for a period of at least twenty days, and the further discovery that the teredo can live in conditions of "putrefaction involving the entire exclusion of dissolved oxygen from the water for at least ten days."



Sections of piling from Crockett, California, destroyed by teredo navalis

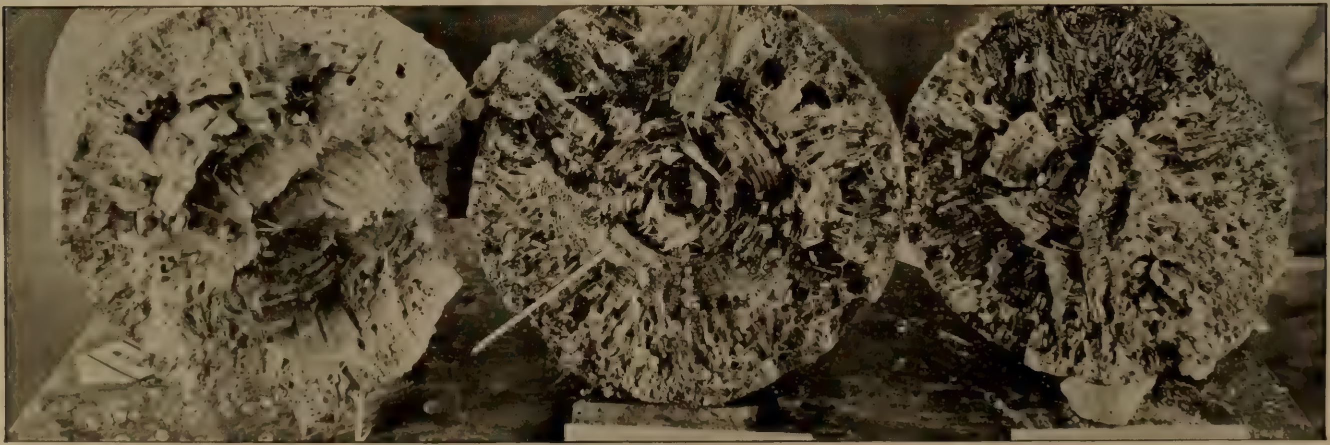
In connection with these discoveries, the marked winter dying off of teredo in the Carquinez Strait region, which was at first thought to be due to a larger body of fresh water in the river, has been proved to be caused by a fungus and bacteria infection and not primarily by the lack of salt.

Practically these newly discovered facts mean that protection to wooden piling must be extended over a much wider area than had been thought necessary.

There has been considerable criticism from practical shipping men and men with large capital invested in terminal structures on account of the fact that so much of the work of the committee has been confined to strictly biological research. The practical conclusions given above, arrived at solely through biological research, should be sufficient answer to this criticism.

Professor Kofoid, after considerable investigation, predicted some time ago that the same teredo that was working in Carquinez Straits might be expected as a visitor on the North Atlantic Coast. He was hotly contradicted at the time by many Eastern authorities and by some on the Pacific Coast, and yet during the winter of 1921-1922 the teredo made its appearance almost at the mouth of New York harbor, where the investment in structures supported upon untreated wooden piling runs into hundreds of millions of dollars.

Based on the biological work the



More work of the borer. Left to right: Avon dolphin, driven in 1916; pulled in April, 1921; Avon wharf mooring pile, low water line, driven in March, 1919, pulled June 16, 1921. Avon wharf mooring pile, mud line, driven in March, 1919; pulled June 16, 1921.

marine piling committee has worked out tentative specifications for creosoted oil and the treatment of timber with this material for protection from marine borers. Creosoted piling is being furnished in the San Francisco Bay region and elsewhere on these specifications, which will be revised from time to time as further knowledge results from the investigation work now in progress.

At the instance of the San Francisco committee the National Research Council of Washington, D. C., has appointed a special committee on marine borer investigation that will explore and correlate the work on this subject throughout the United States.

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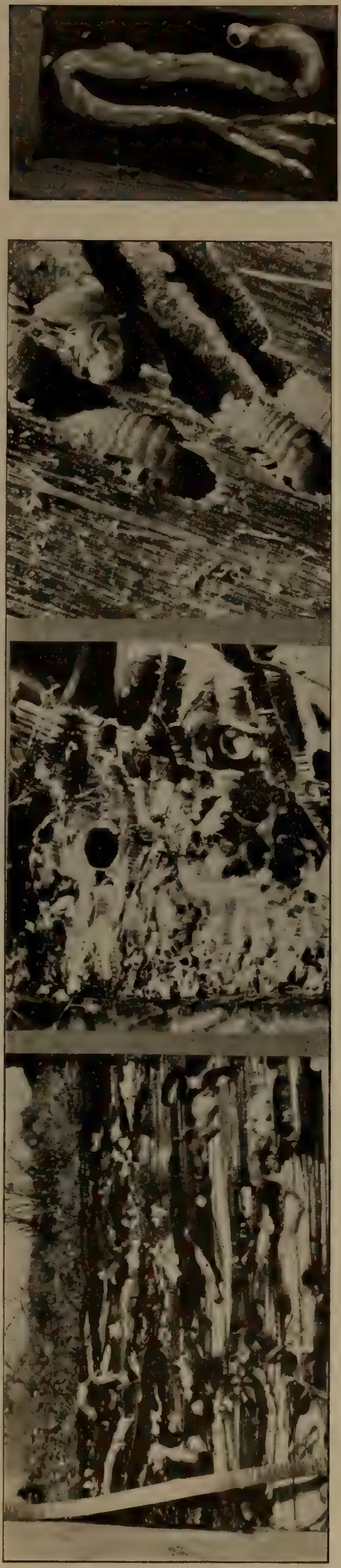
A subcommittee of the United States Shipping Board, composed of Commissioners Chamberlain, Benson and Lissner, Clifford W. Smith, secretary of the board, and Charles F. Gerry, attorney-examiner of the Interstate Commerce Commission, has been holding a series of hearings on the question of whether or not there are adequate American flag tonnage facilities to warrant the enforcement of Section 28 of the Merchant Marine Act of 1920. The hearings were scheduled to be held as follows: Chicago, Illinois, July 3; Portland, Oregon, July 10; Seattle, Washington, July 12; San Francisco, California, July 17; Los Angeles, California, July 19.

* * *

At a meeting of the stockholders of the Nippon Yusen Kaisha held on May 29 it was announced that the company had made a net profit of yen 2,604,515.52 for the six months ending March 31, 1922. Compared with the preceding half year, this is a decrease of 20 per cent and a decrease of 50 per cent for the same period last year. The marked decline in revenue is attributed to the falling off of freight shipments and the general depression in shipping circles. The company has withdrawn from the dividend equalization reserve yen 2,000,000 and has declared a half-year dividend at the rate of 15 per cent a year. The company carried to new account yen 343,717.02 as against yen 409,201.50 for the preceding six months.



At top, xylotrya taken from mud line of creosoted pile. Second, limnoria working in pile (magnified 12 diameters). Third, teredos, large and small, working in section of pile. At bottom, longitudinal section of pile showing teredo at work.

## THE PERFECT FIRE EXTINGUISHER

FOR many years chemical engineers have been searching for a combination of ingredients that would form a foam of bubbles to blanket fire. Many such combinations have been tried out and found to have various disadvantages. Some had a tendency to decompose and deteriorate while held in solution and so become useless when called upon in an emergency. Others made too thin a foam; still others were objectionable on account of unpleasant odors.

It is believed, however, that in Foamite, which has been tested thoroughly in a commercial way with an experience covering several years and under the most trying conditions, both afloat and ashore, the perfect fire extinguisher has been found.

The Foamite Firefoam system, as commercially installed, bases its fire extinguishing properties upon the chemical action that takes place immediately upon the mixing of two solutions, in one of which Foamite is held in suspension and in the other materials that upon mixing generate carbon dioxide. The foam and the carbon dioxide being formed at the same time, it is evident that the bubbles of the foam will be filled with that gas. The foam film, being tough enough to hold and imprison the carbon dioxide under the action of heat, will spread a complete blanket over the surface of any burning liquid, such as oil in the tank, and smother the fire in a very short time.

Over 20,000 land oil storage tanks have been equipped with this system, and the greatest passenger vessels in the world are being fitted with it as rapidly as the circumstances of their employment will permit. Included among these passenger vessels might be mentioned the Aquitania, the Mauretania, the Olympic, the Majestic, and the Berengaria.

The system has the full approval of the American Bureau of Shipping, American boards of marine underwriters, British Board of Trade, and the Fire Offices' Committee.

While this system is simplicity itself in its action, the installation of the system, especially aboard ship, calls for specialized engineering knowledge and experience and, properly installed, it practically eliminates the risk of fire in engine-room, boiler-room, or fuel tank.

# THE KEY SYSTEM'S NEW FERRIES

## Turbo-Electric Drive Adopted for Two Vessels Under Construction by the Los Angeles Shipbuilding & Drydock Corporation

THE new ferry boats of the San Francisco-Oakland Terminal Railways (Key System), under construction by the Los Angeles Shipbuilding & Drydock Corporation, will be put in service between the Key System pier and the San Francisco Ferry building early in 1923.

These boats have been designed by John B. Matthews, consulting engineer and surveyor, of San Francisco. They will be constructed of steel on the transverse system of framing in accordance with the rules of the American Bureau of Shipping. That bureau has already examined the plans, approved them and given the vessels A-1, its highest class.

The dimensions of the boats are as follows: Length over-all, 240 feet; breadth molded, 42 feet; breadth over guards, 62 feet 6 inches; depth molded, 19 feet 6 inches.

### Extra Strength Provided

The hull lines will be of sufficient fullness to insure stability and steadiness in any weather encountered on San Francisco Bay. The weight of the framing and plating, in fact, will be slightly in excess of that required by the American Bureau of Shipping, so as to add stiffness and strength for the prevention of vibration, and also for reserve material against salt water action.

There will be seven water-tight transverse bulkheads spaced throughout the vessels in such a manner that any one compartment formed thereby may be completely flooded with water without endangering the safety of the vessel. Each compartment will be equipped with powerful wrecking pumps with suction pipe arranged so that they may be kept free of incoming water to the capacity of the wrecking pump.

The speed of the boats will be 13 knots an hour. The main propelling machinery will consist of one turbo generating set, to be manufactured by the General Electric Company, of the impulse marine condensing type, normal rating 1000 kilowatts, 500-volt direct current with one 75 kilowatt direct-connected 115-volt exciter.

### Two B. & W. Boilers

Steam for these turbines will be supplied by two Babcock & Wilcox boilers of watertube type, with a total heating surface of 5000 square feet, and will carry steam pressure of 225 pounds a square inch. They will be fitted with superheater capable of furnishing superheated steam at 65 degrees Fahrenheit above normal. Boilers will be fitted for burning oil with Coen type burners under natural draft, regulated by control system governed by boiler pressure.

The turbine will be operated at 210 pounds steam throttle pressure, 50 degrees superheat, 28½-inch vacuum, 30-inch barometer. The direct-connected exciter will be of sufficient size to supply current and excitation to the propelling motors, lighting, steering gears, etc.

There will be two motors of double armature type, manufactured by the General Electric Company, each designed for 1200 shaft horse power at 125 revolutions a minute. Each motor will be coupled through shafting to its own propeller and each independent of the other. Arrangements will be made so that either may be operated for speed requirements while only slightly dependent upon the other. This is effected by the Ward Leonard system of control, which will be operated from the engine room only. This control will be so connected that when the speed of the driving motor is furnishing all the driving power through the rear propeller, the speed of the forward motor will be regulated so that it will revolve only rapidly enough to relieve the drag or resistance of the forward or idling propeller, and vice versa when direction of vessel is changed.

### A Complete Innovation

This arrangement and type of machinery for steam ferry boat purposes is a complete departure from that heretofore used. It will eliminate the resistance of the forward wheel of vessels fitted with reciprocating engines having a continuous shaft throughout the length of the vessel with propeller wheels at each end operating at the same speed. The horsepower necessary to operate only the idling portion of the machinery will effect a considerable reduction in total necessary horsepower, and may be operated under favorable and economical fuel conditions, together with saving in upkeep.

There will be two 35 K. W. turbine-driven auxiliary generating sets, direct current, manufactured by the General Electric Company, which will be used for supplying power for lighting, steering gear, ventilating motor, and all other electrically-operated machinery; also for excitation to the main propelling machinery if necessary. One set will be placed in the lower engine room for continuous service, and the other in reserve in the engine room casing above the main deck, to be used only in case of emergency.

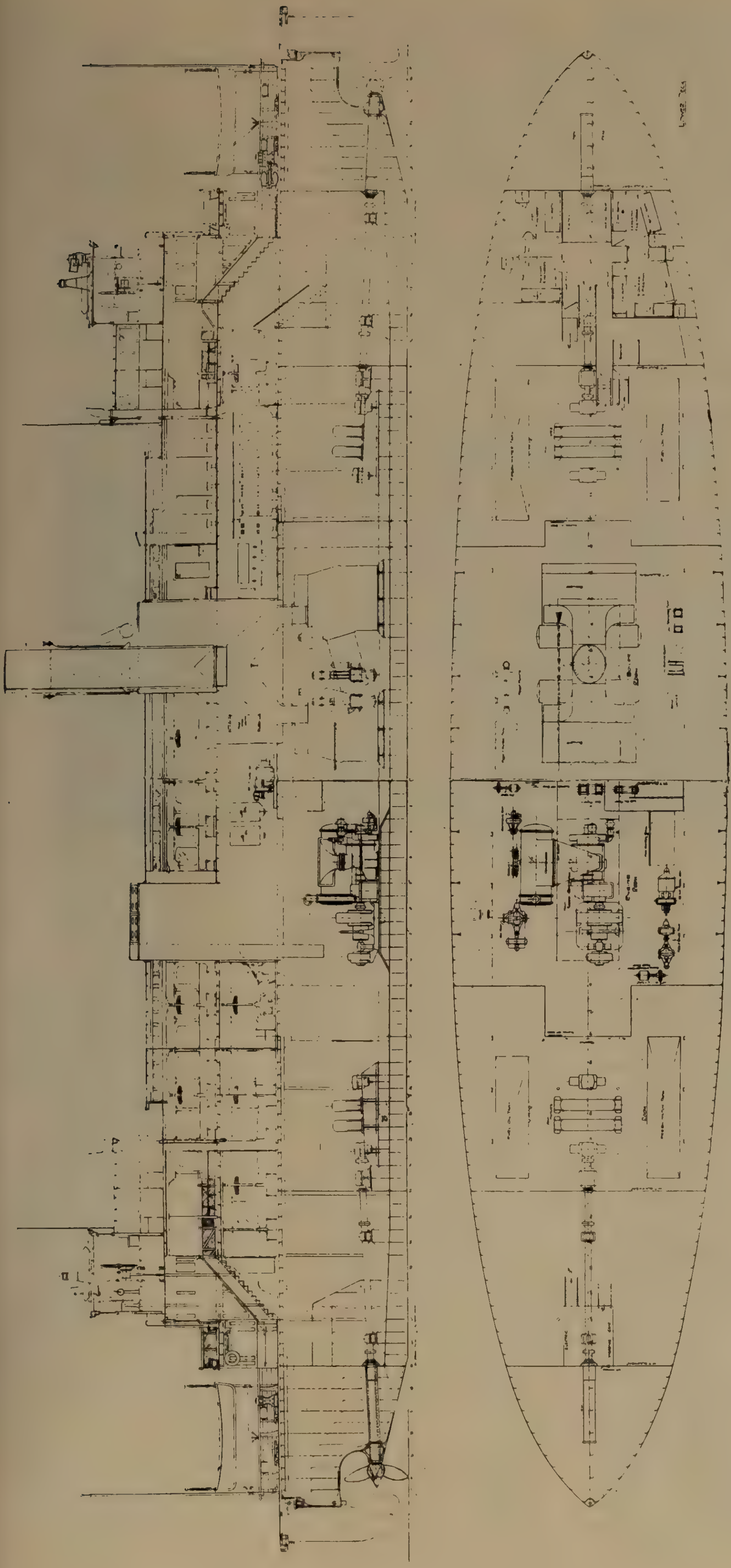
### The Auxiliary Equipment

The condensing outfit, of the C. H. Wheeler make, will consist of the following: The main condenser will be of the surface condensing type, having a wet and dry suction cylindrical shell. It will be constructed of Muntz metal tubes and tube sheets, and will have a cooling surface of 2500 square feet. The main circulating pump will be of centrifugal type, also of the C. H. Wheeler make, and will have a capacity of 3000 gallons of water a minute, besides the sea suction and surcharge to condenser and overboard. It will also have a large bilge pipe suction to be used in case of emergency.

In lieu of the regular standard type of air pump for the main condensing system there will be two radio jets of C. H. Wheeler make, each having a capacity for delivering 24.3 pounds of free air an hour. These radio jets will be so connected that one will be in constant use while the other is held in reserve for alternate use.

The condensate pump will be of centrifugal turbine driven type with capacity of 25,000 pounds steam per hour.

The engine and boiler room bilge, fresh water and sanitary pumps, of Worthington make, will be electric motor driven of ample capacity for desired service. All other pumps are Worthington make, of simplex or duplex plunger standard types.



Inboard profile and lower deck arrangement Key Route ferryboats

The total passenger carrying capacity of each of the boats will be 3000 persons, with seating capacity for 2000. Seats will be double, of solid mahogany, shaped to give comfort and rest to passengers, and will be placed athwart ship.

The inside finish of both main and salon decks will be in white cedar, colored to soften reflected lights. Trimmings, cornices and sills below windows will be of mahogany.

### Excellent Ventilating System

The ventilating system will be of the latest improved type. Over every alternate window and on all outside doors will be fitted bronze grills of ample mesh to allow free access of fresh air. Under every alternate seat in the cabins will be fitted ventilating ducts, which will extend from the side of the vessel to the end of the seat next to the aisle. These ducts and grills will admit fresh air passing above the head space and below the seat base, thereby effecting a complete circulation of air to all parts of the cabins and salons, including restaurants, lavatories, etc. The heavy air will be drawn off these compartments by four electrically-driven exhaust fans, of the Sturtevant blower type, placed on the hurricane deck. Air ducts will lead from various parts of the cabins, salons, restaurants, lavatories, etc., to the fans. By this complete system of ventilation, the admission of fresh air and the drawing off of heavy air, the boats will be provided with a complete change of air every five minutes.

### Accommodations for Passengers

The accommodations for the comfort and convenience of passengers will be of the very latest type of equipment. On the salon deck there will be a women's rest room, furnished with lounge, chairs and mirrors. Adjacent to this rest room there will be a lavatory fitted up with the latest type of marine lavatory fixtures. On the main deck there will be a wash room and lavatory for men; news stand and boot shining stands.

The restaurant on each boat will have seating capacity for eighty persons. The tables and stools will be of mahogany finish. The galley will be fitted up with the latest type of equipment, consisting of steam heating tables, coffee and hot water urns, ice box, etc., all arranged for quick and efficient service.

### Fire Fighting Apparatus

The fire fighting apparatus will consist of a powerful centrifugal turbine-driven pump, of the Worthington make, having a capacity of

500 gallons a minute under 100 pounds' pressure. This pump will supply water to nine hose plugs, which will be distributed throughout the vessel in the most accessible places. In addition to these nine plugs, there will be two swivel high-pressure nozzles of large capacity placed at each end of the hurricane deck, and so arranged as to throw heavy streams of water on adjacent buildings, as well as on the vessel itself. This fire fighting outfit not only gives the vessel maximum protection against fire, but also furnishes fully equipped fire boats for the protection of other property. Two hand pumps and fire extinguishers will also be available.

### Life Boats and Rafts

The life-saving apparatus, in addition to the ordinary life belts, life boats, etc., required by law, will consists of eight large Balsa life rafts, placed four on each end of the hurricane deck in position ready for launching at a moment's notice. Two of these rafts will be fitted with self-illuminating tubes to render them visible at night. These rafts furnish safety appliances additional to those required by law.

The steering gear will be electrically-driven, of the Allan Cunningham make, and will be driven by a 7½ horsepower motor, from which power will be transmitted to a horizontal chain drum through a Waterbury hydraulic, variable-speed transmission device and gears.

The San Francisco-Oakland Terminal Railways was attracted to the turbo-electric system of prime mover by the excellent results obtained by the United States government on colliers, battleships, Coast Guard cutters, etc. The dependability of this form of power, and its easy control have proved conclusively its safe and economical operation.

The Oakland Estuary and Alameda Works, Union Plant, Bethlehem Shipbuilding Corporation

# SOME HEAVILY LADEN VESSELS

THE steamship Willhilo of the Williams Steamship Company, passing through the Panama Canal on May 12 from New York to Los Angeles, San Francisco and Seattle, was reported by her master as carrying general cargo amounting to 10,075 tons, says the Panama Canal Record. The Willhilo is a ship of 5816 gross and 3567 net tons, United States registry measurement; 435 feet in length by 57.6 feet beam, and was, accordingly, well loaded. She was drawing 25.6 feet of water at time of transit.

During the calendar year 1921 the 428 vessels which passed through the canal in the United States coastwise trade had aggregate registered net tonnage of 1,739,312 tons and carried a total of 1,944,118 tons of cargo. The ratio of tons of cargo to net tons was 1.12 tons of cargo per net ton. In the case of the Willhilo the ratio was 2.82.

The items reported on the cargo declaration for the Willhilo were as follows: agricultural implements, 12 tons; automobiles, 4; canned fruits, 22; canned vegetables, 72; cement, 240; chemicals, 59; manufactured goods of iron and steel, pipe, etc., 6652; machinery, 437; textiles, 1271; other manufactured goods, not separately listed, 1037; paper, 28; rubber tires, 3; tobacco, 21; leather, 3; carbide, 16; pig iron, 58; sheet tin, 140. The total of the foregoing is 10,075 tons.

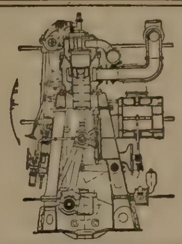
Inasmuch as the Panama Canal net tonnage of the Willhilo, which is the interior space which can be devoted to carrying passengers or cargo, in tons of 100 cubic feet, is 5882 tons, it is theoretically possible to load the ship with 2½ times as many tons of 40 cubic feet, the space measurement of a ton of cargo.

The British steamer Sheaf Mead (formerly the Hawkser), of 2689 net registered tons, passed through the canal on May 12, bound from Jacksonville, Florida, to San Antonio, Chile, with 6000 tons of coal, a ratio of cargo to net tonnage of 2.23. The Panama Canal net of the Sheaf Mead is 4008 tons.

The Japanese steamer Hague Maru, making the transit on the 13th, on the way from New York to Yokohama and Hongkong, reported 8530 tons of structural steel, machinery, and general cargo. Her registered net tonnage is 3591 tons, and the ratio of cargo to registered net on this voyage was 2.38. Her Panama Canal net measurement is 4507 tons.

These instances afford striking examples of the differences between registered net tonnage, as established by the various national rules, and the net tonnage as determined by the Panama Canal rules for the purpose of measuring the actual capacity of the ship for carrying cargo or passengers.

# Oil Engines and Motorships



## A DIESEL-ELECTRIC TANKER

### Standard Oil Company of California Places Order for Unusual Vessel for Bay and Coastwise Service with Bethlehem Shipbuilding Corporation

THE Standard Oil Company (California), which already has two diesel engine-driven tankers in operation, is again manifesting its conviction that diesel power is the solution for economical power for ship propulsion as well as auxiliary. This company has just contracted with the Bethlehem Shipbuilding Corporation, Union Plant, for the construction of a diesel-electric propelled single-screw tanker for bay and coastwise service.

The diesel-electric drive has been adopted, because with this type of propulsion the main generator units that supply power to the propelling motors while the vessel is under way may also be used for supplying power to cargo pump motors while the vessel is discharging, thus avoiding the installation of a large auxiliary plant for that purpose. The simplicity and ease of operation of this type of drive, especially in bay service, where a great deal of maneuvering has to be done, also have been given due consideration. The main engines driving the generators run continuously at a constant speed as long as the ship is in operation, and are always started with no load, thus requiring a minimum of starting air storage and equipment.

#### Pilot House Control Adopted

This system also lends itself to economy and ease of operation when combined with pilot house control, which has been adopted for this vessel. This brings the propelling power directly under control of the officer on the bridge, who by a simple movement of the operating lever stops, starts, reverses and accelerates the propelling motor in either direction. This in turn limits the engineer's duties to "keeping things running." relieving him of the necessity of standing by the throttle to respond to the call from the bridge.

The vessel will be built on the transverse system of framing and will have the following dimensions and particulars:

| | |
|---|---|
| Length | 210′ 0″ |
| Beam molded | 40′ 0″ |
| Depth | 16′ 6″ |
| Block coefficient | .76 |
| Mean loaded draft | 15′ 0″ |
| Loaded displacement, tons | 2,725 |
| Deadweight, tons | 1,875 |
| Propelling motor power, B. H. P. | 600 |
| Estimated speed, loaded, knots | 9 |
| Cargo tank capacity, barrels | 12,400 |
| Cargo hold capacity, tons | 225 |
| Fuel tank capacity, barrels | 585 |
| Fuel consumption running, bbls. 24 hrs. | 24.5 |
| Cruising radius, days | 24 |
| Fuel consptn., pmpg. out, gals. per hr. | 15 |
| Pumping out time, hours | 6 |

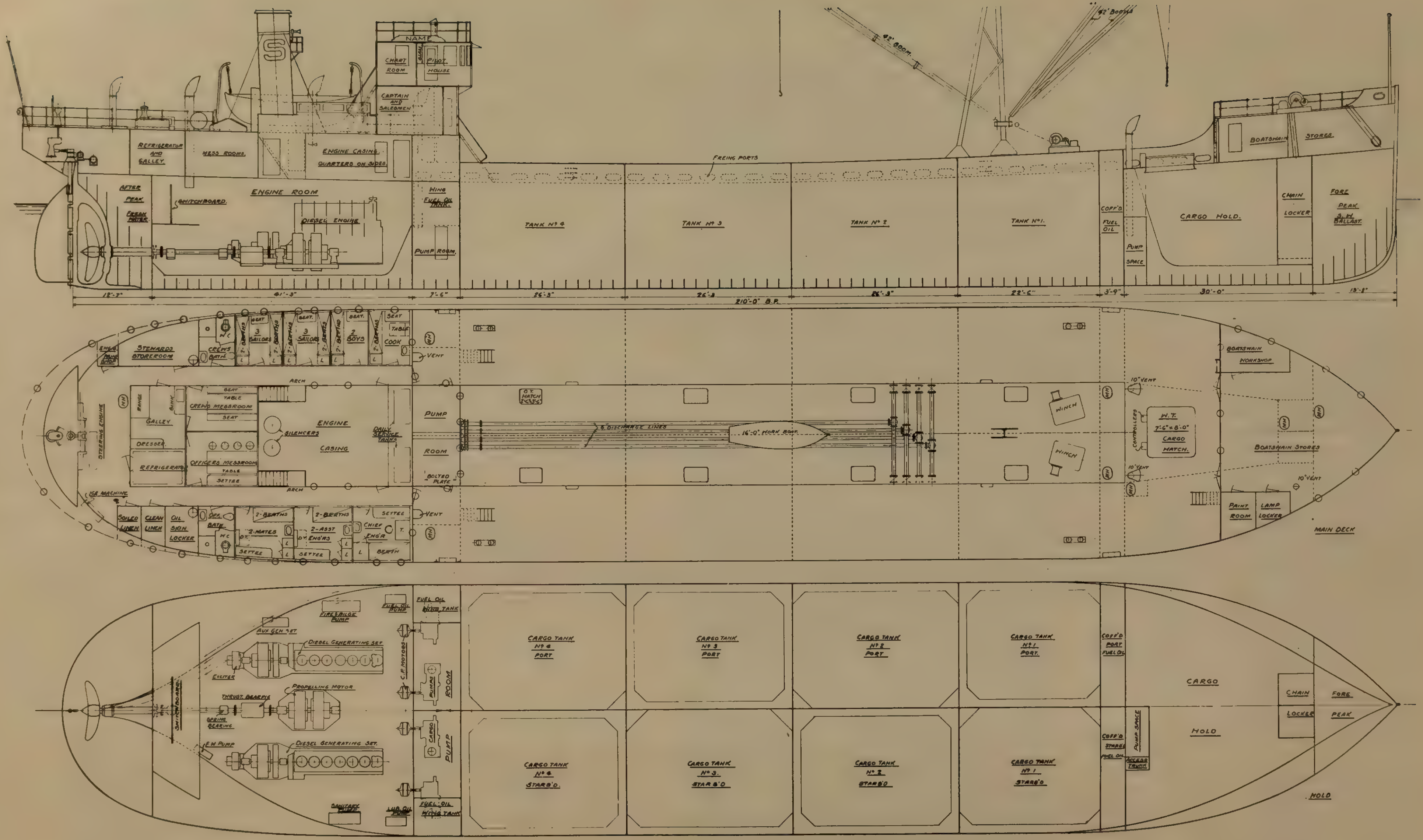
#### All Machinery Is Aft

As indicated in the preliminary plan, all the machinery, including the pump room, is located aft, with the quarters, navigating bridge and pilot house directly above. A continuous expansion trunk is fitted in way of the cargo tanks connecting into the engine casing at the after end. A continuous bulwark with ample freeing ports is fitted between the poop and forecastle, for the safe carrying of a deck load. All hatches, piping and other deck obstructions will be placed on top of the expansion trunk, leaving the remainder of the deck clear for handling of package freight.

A cargo hold is fitted forward of the cargo tanks and a large space under the forecastle deck is also made available for smaller case goods by fitting large watertight doors in the bulkhead. Case goods will be handled by two motor-driven winches fitted on top of the expansion trunk. The windlass and steering engine will also be motor driven. The mast, which consists of a steel H-column with channel braces, carries three 3-ton cargo booms for handling the discharge hose as well as cargo. This arrangement does away with all wire rigging, which, due to rapid corrosion, requires early replacement.

#### Pacific Werkspoor Engines

The propelling machinery consists of two 400 B. H. P. Pacific Werkspoor 6-cylinder 4-cycle trunk type non-reversible diesel engines, each direct connected to one direct-current 245-kilowatt, 230-volt, 265 R. P. M. General Electric generator with a 30-kilowatt, 115-volt, overhung exciter on the same shaft. The generators furnish power to the double armature propelling motor, which consists of two 300-horsepower, 130 R. P. M., 230-volt motors mounted on the same shaft on a common bedplate. The two generators and motors are all connected in series with one motor armature between each generator, thus obtaining the advantage of a 500-volt system with only one-half voltage to ground. The control of the propelling motor is obtained with a Ward-Leonard system of control, operated from the pilot house only. The speed of the engine and generators is constant, while the voltage is varied or reversed by the operation of the control rheostat, which controls the field current of the generators. Thus both the speed and direction of the propelling motor are controlled directly from the pilot house. The excitation current is supplied by the two 115-volt exciters, which are made oversize, as they also supply all auxiliary power required with the exception



Inboard profile, main deck and hold plans of diesel-electric tanker to be built for Standard Oil Company of California (tops of mast and booms are not shown in engraving) of the cargo pump motors. Power to these motors is supplied from the main generators at 230 volts.

Each of the main engines has, in addition to the fuel injection pump, also one cooling water pump, one lubricating oil pump, one bilge pump, and one fuel oil pump for filling the daily service tanks. The exhaust from each engine is carried through a water heater designed to utilize the waste heat in these gases in order to obtain hot water for radiators in the various rooms, also to heating coils in the fuel oil tanks as well as hot water to the galley, showers and wash basins. A by-pass is also provided around this heater to regulate the heat thus utilized.

There is also installed one independent fire and bilge pump, one sanitary and heating service pump, and one fresh water pump. Two small emergency hand pumps are provided, one to handle fuel oil to the daily service tank and the other to draw from the lubricating oil drain tanks. During ordinary operation only the sanitary and heating service pump will be required to run, as all other essential pumps are driven from the engines. No auxiliary air compressor is installed, as the starting air required is very small. There is provided a small oil engine driven generator set to furnish power for emergency lighting when no auxiliaries are running, also a storage battery to furnish lights when the vessel is laid up and it is not desired to keep an engineer on duty. This battery will furnish lights through a separate circuit to all quarters, engine room and pump room.

### Arrangement of Piping

The pumping equipment consists of four horizontal duplex pumps driven by electric motors located in the engine room with the shaft carried through a stuffing box on the bulkhead separating these two spaces. By this arrangement the motors are removed from the pump room, where explosive gases accumulate and at the same time the necessity of providing a separate ventilating system is avoided. The motors are also under direct observance of the engineer at all times. The motors are operated by controllers located in the upper engine room with the shaft carried through the bulkhead the same as the motors, with hand wheels in the pump room at the top grating, where the pump gauges also are located. Each of these four pumps is connected to one of the four cargo tanks through separate suction lines and discharges through separate discharge lines to deck. Cross connection is provided both on suction and discharge side of pumps and a sea suction and overboard discharge is arranged for on either side of the ship. All this piping will be so arranged that four grades of cargo oil may be handled at the same time without danger of mixing. The capacity of the cargo pumps has been so proportioned that the total cargo can be discharged in about six hours, and only about one-half of the capacity of one of the main engines is required for this purpose, making the hourly fuel consumption during discharging about 15 gallons. This is about one-tenth of that required for a steam plant with reciprocating steam pumps.

Simplicity and economy of both arrangement and operation have been the deciding factors in the working out of the various details of the design, and the owners feel that the diesel-electric drive, with electric auxiliaries as applied in this design, is particularly well adapted to obtain this end, especially as applied to this kind of service.

The design is a new departure in tank vessels and should receive considerable attention.

# RUNNING COSTS OF MOTORSHIPS

TAGE MADSEN, chief engineer of the Transatlantic Steamship Company, Gothenburg, recently read a paper before the North-East Coast Institution of Engineers and Shipbuilders relating in a happy vein his experiences on the maiden voyage of his company's motorship, the Yngaren, built and engined by William Doxford & Son, Sunderland, and the biggest single-screw motorship job afloat. It will be remembered by readers of Pacific Marine Review that the Yngaren is powered with a 3000-horsepower four-cylinder motor of the opposed piston, solid injection, Doxford-Junkers type.

This paper is especially interesting because Mr. Madsen has directly under his charge a number of first-class Burmeister & Wain four-cycle motorships and has just had delivered to his company two smaller single-screw ships, one of the Burmeister & Wain long stroke type, the other of the Stockholm Atlas diesel type. He is at the same time operating quite a number of steamers, so that he is in a position to make correct comparisons between the various types of motorships and the steamers, and his conclusions from these comparisons are interesting indeed.

The figures for the maiden voyage of the Yngaren cover the trip from Hamburg via English ports to Batavia, returning via Australian ports to Dunkirk. The interesting comparison is with the Auten, a steamer with a sister hull to the motorship Yngaren and with a 3000 indicated horsepower triple expansion engine. The Auten is designed to burn either coal or oil and on this voyage, for twenty-five days running out, one boiler was using oil and the other two were working on coal on the run from Panama to Wellington, consuming 9½ tons of oil and 30 tons of coal per twenty-four hours. If the 9½ tons of fuel oil had been burned inside of the motor of the Yngaren, they would have produced more horsepower than was produced by this oil and the 30 tons of coal under the boilers of the Auten.

To make the voyage from Panama to Wellington the Auten carried 1400 tons of coal and 322 tons of fuel oil. The oil alone would have more than taken the Yngaren over this voyage, so that the 1400 tons of coal was an unnecessary burden.

On the voyage homeward the Auten covered practically the same ground as the Yngaren on her return trip. With the motorship, the average speed on this voyage was 11.1 knots, and the fuel oil burned per mile was 43.6 kilograms, while with the steamer at an average speed of 10.01 knots the consumption of coal per mile was 201 kilograms. The steamer engineering department employed a total of eighteen men, and the Yngaren in her engineering department a total of thirteen men.

In the seventy-seven days' run out and back, the total stopping time of the motorship amounted to 17 hours 54 minutes, divided into seventeen stops, although on the way home she was forced for the entire run, the average indicated horsepower on this leg of the run being 3050 with the ship fully loaded.

# THE FIRST AMERICAN DIESEL-ELECTRIC FERRY

## Golden Gate Ferry Company of San Francisco Pioneers Way. Pacific-Werkspoor Engines Drive General Electric Generators. Sister Vessel to Follow

THE Golden Gate Ferry Company of San Francisco deserves great credit for having the courage to pioneer a new and promising road in marine engineering with its ferry, the Golden Gate, which was put in service on the San Francisco-Sausalito run July 4, 1922.

This vessel is of wood construction, of the double-end screw-propeller type made familiar on San Francisco Bay by the Berkeley of the Central Pacific Company, by the Key Route boats, and by the Edward T. Jeffery of the Western Pacific. The Golden Gate has an over-all length of 220 feet and a length between perpendiculars of 207 feet. She was built by the James Robertson Shipyard at Alameda, which also has a sister vessel under construction. The Golden Gate's principal interest lies in the diesel-electric machinery.

### Her Power Plant

The propulsion equipment consists of two 525 I. H. P. Pacific Werkspoor diesel engines, built by the Pacific Diesel Engine Company of Oakland, California, each directly connected to a General Electric Company 360-kilowatt, 250-volt, shunt-wound, direct-current generator. The power from these generators is delivered to two 750-horsepower, 500-volt, 145/180 R. P. M., shunt-wound motors, one on each propeller shaft. A 35-kilowatt, 115-volt exciter direct-connected to each engine generator is used to furnish power for lights, excitation and auxiliaries.

The boat represents a radical departure in marine engineering, being the first double-end screw ferry with a separately-driven propeller at each end. The most economical method of propelling such a boat is to have the bulk of the power concentrated on the driving propeller. Electric drive is the most satisfactory method of accomplishing this because, through a simple method of electrical control, it is possible to exert the entire output of the power plant on either propeller at will or to divide that output between the propellers in any desired proportions up to the capacity of the plant.

It will be noted that the rated generating capacity is equivalent to about 960 horsepower serving two 750-horsepower motors. With the after or driving propeller taking its full load, it is expected that the motor on the forward propeller will be turned over just fast enough to eliminate drag and will absorb not more than 100 horsepower. Some experimental adjustment will be necessary before the best speed for the idling propeller is definitely determined. When this has been accomplished, it is confidently expected that the Golden Gate will break some economy records for ferry operation.

The control arrangement embodies the Ward-Leonard system, which has long been in successful operation on most of the electric street cars in America. This system gives great flexibility in distant control. In the Golden Gate three stations are arranged, one in each pilot house and one in the engine room, so that the navigating officer in the pilot house will operate the driving motors in the same way that a motorman operates the motors of a street car.

After the engine room force has started the engines and brought them up to speed, the engine room control station is cut out, and the pilot house stations take charge. The engineer thereafter simply has to "tend" his engine and generator until quitting time, just as though he were in a power plant ashore. The engines are non-reversible and run at constant speed. All movements of the boat are controlled entirely independent of the engine room crew.

### Generators in Series

The elementary wiring diagram indicates how the two generators are to be connected in series. This method has the advantage of affording perfect voltage control over a wide range, since it is not necessary that the voltage of the two plants should be always equal. The single-pole, double-throw knife switches make it possible to operate either plant independently in case of the disability of the other.

Switches A and B, also C and D (see diagram), are so interlocked that it is impossible to send current through the armature with no field excitation. Each motor is further protected with an overload relay. A limiting resister is also introduced into the circuit (electric solenoid switch 1) to limit the starting current.

Switches 1, 2, 3, 4 and 5 are all electrically operated from any one of the control stations. Switches numbered 4 and 5 for motors 2 and 1, respectively, are used to increase the value of the shunt field to give greater starting torque.

### Speed Control and Reversing

Shunt field current for the main generators (not

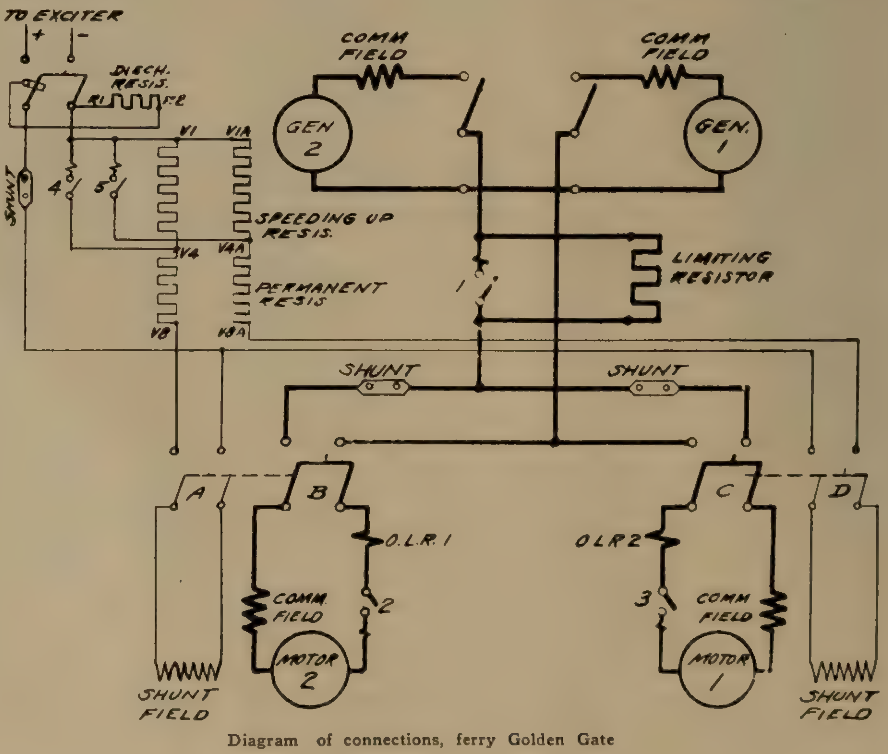
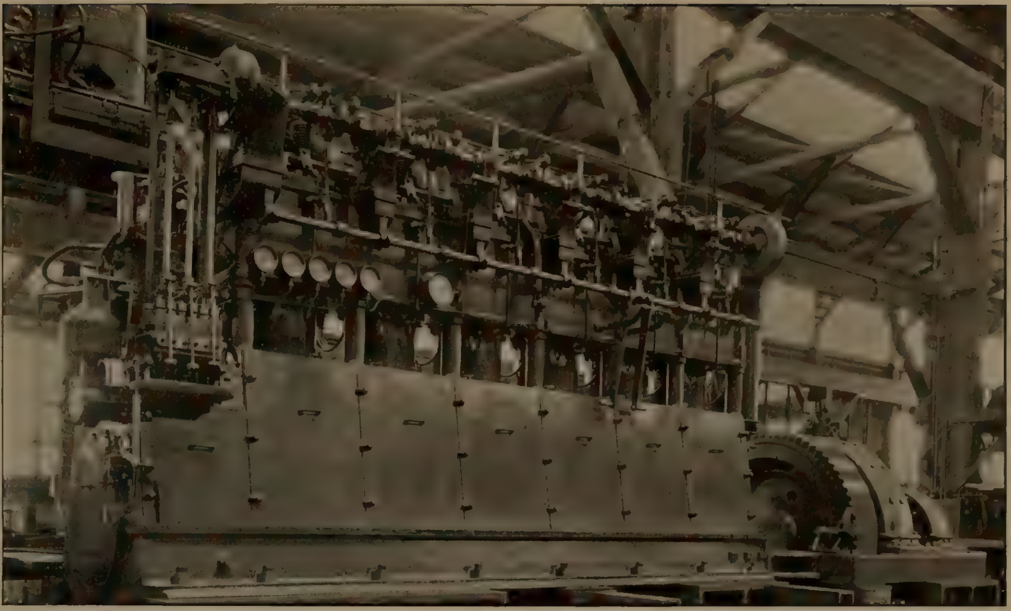


Diagram of connections, ferry Golden Gate shown in diagram) is supplied from the same auxiliary and exciter mains that supply the motor field current. The circuit is completed through control transfer switches to the controlling rheostat at any one of the three control stations. The value and direction of the field current is thus varied at the will of the operator.

The generator voltage and the polarity of the generator output are dependent upon the polarity and strength of the generator field current. Thus the generator voltage and polarity change simultaneously with that of the generator field.

Remembering that the motor field is separately excited and of constant value, it is evident that starting the motors with a low voltage armature current as delivered from the generator and gradually increasing its value affords perfect speed control without wasteful armature resistance even for starting. It is also evident that reversing the polarity of the armature current, the field current remaining the same, reverses the direction of rotation, the action being smooth and efficient.


One of the 525 B. H. P. Pacific Werkspoor diesels installed in the Golden Gate

An adjusting rheostat is inserted in series with the field current of each generator, its purpose being to vary the proportionate load of each plant to suit the operating condition of the engine. The main panel and each control panel are provided with an ammeter indicating motor armature current and another indicating motor field current, also two shaft speed indicators, which are of the magneto type. The main panel also has a voltmeter indicating line voltage, being the voltage of the two generators in series.

### Auxiliary Machinery Is All Electric

A 60-horsepower, 25-kilowatt Sterling engine and generating set is installed on the main deck, as are also the electric fire pumps. Lights and fire pumps will be controlled from the main deck and can be operated from the 35-kilowatt exciter and auxiliary generators in the engine room or from the emergency deck plant. If desired, 35-kilowatt exciters and deck plant can be operated in parallel.

Other auxiliary machinery includes two Rex air compressors and one booster, ventilating fan, De Laval oil purifier, rotary fuel oil transfer pump, and lubricating oil transfer pump. All are electrically driven.

## RELIABILITY OF MOTOR TUGS

THE reliability of the diesel engine in the strenuous marine service is perhaps nowhere better demonstrated than in the towing fleets of the Pacific Coast where diesel power plants have been used in these boats for a number of years past with great satisfaction. This is particularly true of the towboats used for logging in the Puget Sound country.

One of these boats, the Chickamauga, has been in service for over six years in all kinds of weather, for the most part towing logs.

The Chickamauga was built in 1915. She has a length of 70 feet, beam of 18 feet, draft forward of 7 feet 2 inches and aft of 11 feet 5 inches. She is powered with a 4-cylinder, 240-horsepower Nelseco diesel engine, has a propeller of 75 inches diameter, with 42-inch pitch, and uses 6 gallons of fuel an hour for her light sea speed of 9 knots. She is owned and operated by the Pacific Tow Boat Company of Seattle, and the manager of that company, A. W. McNealy, makes the following statement as to her reliability:

"The vessel has never 'lost' a tow of logs. Has been in operation for over six years, during which time she has been going (and ready whenever called upon), 70 per cent of the time, 50 per cent of which she was employed with loads and 20 per cent running light. During the six years she has towed over a billion and a half feet of logs, at times handling in one tow as many as fourteen sections, which, when one considers the great size of Puget Sound timber, indicates a heavy load."

When we consider the fact that log towing makes an absolutely unrelieved load of great resistance and enforced slowness of movement so that often a tug working a raft of logs must pull for hours and days at a time while scarcely making over a mile an hour, we are forced to conclude that this endurance test is certainly an excellent proof of the reliability of the diesel engine.

## CONVERTED TO OIL BURNER

THE steamship Cottonplant, a Great Lakes freighter owned by the Pacific Lumber Company of San Francisco, has been converted from a coal to an oil burner for use in the lumber trade on the Pacific Coast. Installation of the oil-burning equipment was carried out by the Baltimore Drydocks Plant of the Bethlehem Shipbuilding Corporation. The equipment selected is the complete Bethlehem-Dahl mechanical system, which is well known in the marine field for its exceptionally low fuel oil consumption.

The Cottonplant was built for the United States Shipping Board in 1919 by the Great Lakes Engineering Company at Ecorse, Michigan, and recently was purchased by the Pacific Company. The following are her principal dimensions: length, 253 feet 4 inches; beam, 43 feet 7 inches; depth, 24 feet 5 inches; capacity, 4140 deadweight tons; speed, 10 knots; boilers, 2 Scotch, 13 feet 5 inches by 11 feet; engine, one 3-cylinder triple-expansion.

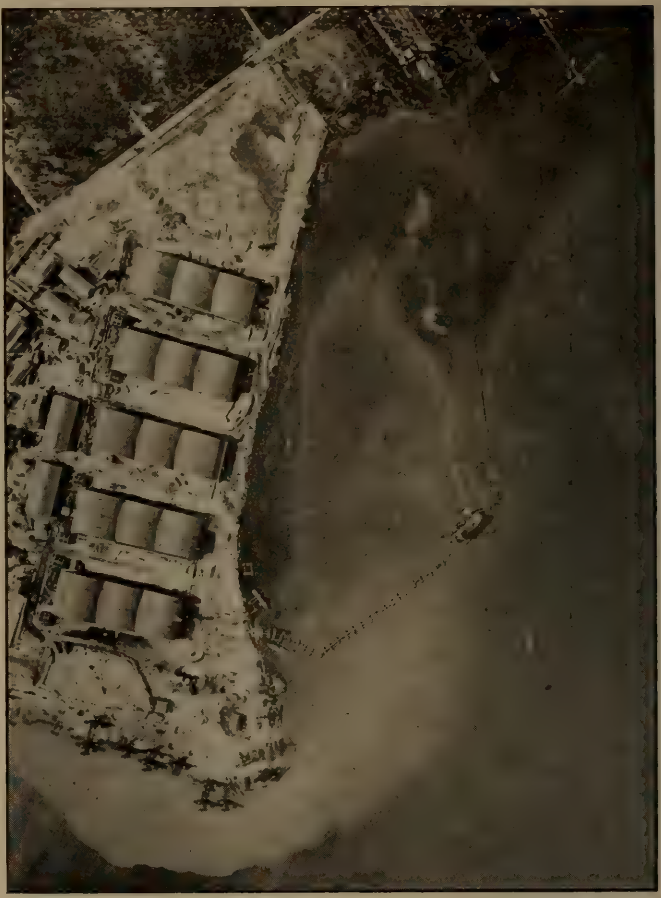
# AERIAL PHOTOGRAPHY BY THE NAVY

### By VERDE M. WHITING

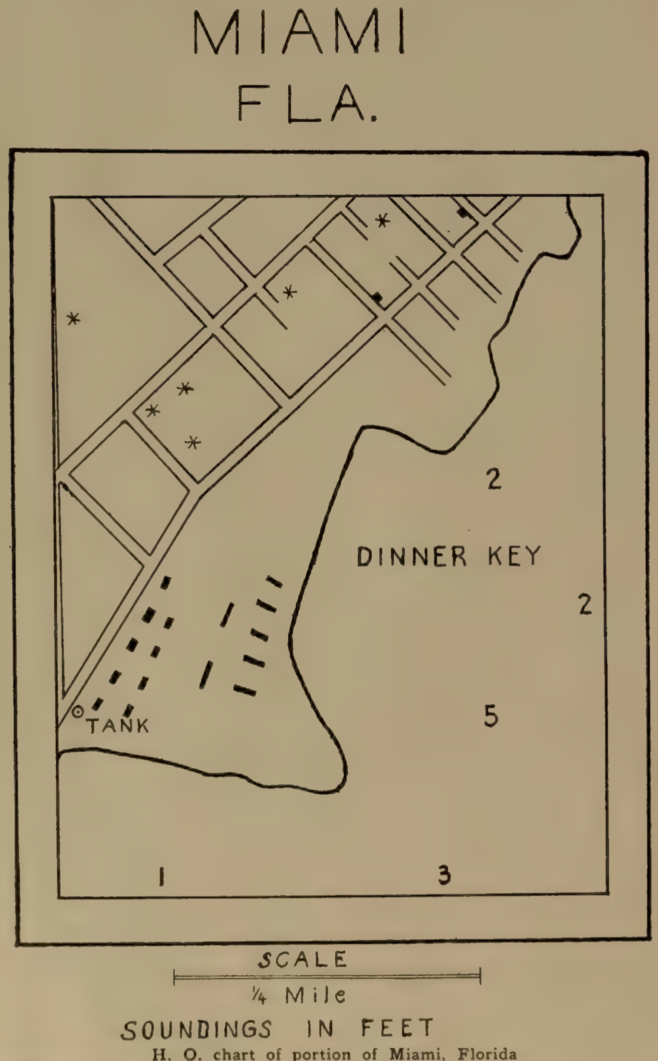
AERIAL photography is being used by the Hydrographic Office of the Navy Department in checking up its surveys, and although it is not yet wholly satisfactory, due to lack of sufficient personnel and proper equipment, it is, as a means of verifying coast lines and depths of water, useful and interesting.

Operations along this line were begun in 1914 by Lieutenant Richardson, U. S. N., with only a six-foot laboratory and a small hand camera, and through his interest and efforts the work has grown to its present proportions of an apparatus on every flying ship, a laboratory in each naval air station in the country, and a personnel of about sixty operators. In February, 1918, a school was established at Miami, Florida, where some good work was done. Since then, mapping by photography has been carried on either by the Navy independently or in conjunction with other government mapping agencies.

In mapping a given territory, a guide map is indispensable to the pilot, who identifies certain points that correspond with the courses and uses them to maintain proper direction. As soon as the negatives are available, they are plotted on the guide map. Thus one makes certain that no gaps are left in the map. Sometimes a mosaic is constructed from the finished overlapping prints. Although other mapping agencies of the government are using the tri-lens camera for this work on account of the wider field it can cover, the Navy is still using a small hand camera of the L-type as easier to handle on flying boats and small planes. The pilot must fly as straight as possible, maintaining a constant level; even then there is a slight distortion of the lens, which the experts are striving to overcome. The Germans and French, who say that their negatives show an error of not more than one-half meter in position and one meter in elevation, have made more progress in this respect than the United States.



An ariel photograph taken at Miami, Florida



H. O. chart of portion of Miami, Florida

The weather is a serious factor to be reckoned with in this work, particularly where fog often prevails. At San Diego, where some work was done in 1915, in a period of 4½ months, only 28 days proved suitable for photography, although this is a much higher average than in many Eastern points.

The accompanying photograph was taken of the school at Miami, Florida, by one of the students, and shows clearly the contour of the coast at that point, as well as the hangars and other buildings of the station. The water being extremely clear at this place, the shelving sand beneath it is plainly visible. A dredge can be seen at work in the center of the picture and the results of its work can be noticed in the chart, which is a copy of a H. O. chart, surveyed a little later. The soundings at this point are five feet, which is the deepest point in this vicinity. The seaplanes are clustered around the point like bees on a hive, the shelving sand at this place affording an ideal landing place. This photograph was taken at a height of 4000 feet, which is a fair average for mapping purposes.

# LIQUOR ON AMERICAN VESSELS

## Legality of Sales of Intoxicants, Affirmed by One Authority, Denied by Another, Hinges on Definition of the Word "Territory"

THERE is no doubt as to the effect of the letters and interviews of the Busch family regarding the sale of liquors on American vessels on the high seas and in foreign ports. The to-do thus stirred up unquestionably has reacted unfavorably on the merchant marine and on the administration's subsidy policy. To deny that would be to shut one's eyes to the obvious. The damage is all the greater because few persons of the thousands who are discussing the question are able to approach it dispassionately and with a conception of the issues involved. Even Mr. Lasker, speaking for the President and the Shipping Board, impeaches the good faith of the Busch family in fomenting agitation at this time. "I believe you to be thoroughly selfish and that you are acting in the hope of creating a public revolt against prohibition so that you may again revive the sale of your liquors," said the chairman of the Shipping Board in a letter to Adolphus Busch, 3rd. "It is, of course, notorious that the Adolphus Busch who founded your brewery was possibly the Kaiser's closest friend in America. . . . Your action in any event will not displease your German friends whose greatest hope of a restored merchant marine is in a hurt to America's new-born merchant marine."

### An Adroit Argument

This is exceedingly adroit argument of the "ad hominem" sort and the more likely to be accepted because what Mr. Lasker says bears on its face the imprint of truth. To accuse a brewer of being selfish when he discusses any phase of prohibition is almost unnecessary; and to denounce the Busch family as being German is merely to invite attention to a self-evident fact. Public opinion, indeed, probably will uphold what Mr. Lasker has said; but nevertheless the chairman has not uttered the last word on the subject.

Nor have those gentlemen who insist (and probably with the best reason in the world) that prohibition on the high seas would hurt the American merchant marine—nor have they satisfied a natural demand for light. Many persons, foreigners and Americans alike, would choose a "wet" vessel in preference to a "dry." The most ardent member of the Anti-Saloon League scarcely would deny that statement. But, at this time, that is beside the point. The same assertion may be hazarded of nine-tenths of all the discussion, especially that emanating from the Busch family. August A. Busch, for example, in his letter to President Harding, asserted that the United States was "incomparably the biggest bootlegger in the world." That statement is, of course, an insult to the intelligence of a seven-year-old child, but Mr. Busch evidently chose his words not with an eye to their accuracy but with a desire to say the striking thing. He may, therefore, be dismissed from consideration.

### The True Issue

The one focus of discussion should be this: Do the Eighteenth Amendment and the National Prohibition Act forbid the sale of intoxicants on American vessels on the high seas and in foreign ports? The question is easily stated but most difficult of solution, because it lies in the twilight zone, and upon analysis will be found to depend altogether upon the definition of one word, to-wit, "territory". Up to July 1, two authoritative and diametrically opposed opinions had been rendered, the one by William L. Frierson, acting attorney general during Mr. Palmer's absence in 1920; the other by Elmer Schlesinger, general counsel of the Shipping Board. Mr. Frierson held that the sale of intoxicants was forbidden; Mr. Schlesinger held that it was not. Yet, although Mr. Frierson's opinion was given two years ago, it has not been respected. "An assistant to Attorney General Palmer during the prior administration had held a different opinion from that of the present general counsel of the Shipping Board," said Mr. Lasker in his letter to Mr. Busch; "the prior chairman had issued orders that the Palmer opinion must be respected, but it is true that in fact during the Wilson administration in so far as the Shipping Board operated passenger ships liquor was served," and Mr. Lasker, of course, admits that his administration has pursued the same policy.

### Two Conflicting Opinions

For this he has as authority the opinion of Mr. Schlesinger. But it appears that Mr. Schlesinger's opinion does not bear the official weight of that of Mr. Frierson. On the other hand, many persons, on reading and comparing the two, will incline to the belief that Mr. Schlesinger's possesses the greater intrinsic authority. It does seem to be better considered and to summon the greater mass of law, precedent and reason to its support. But neither opinion may be accepted as final, for Congress or the Supreme Court probably will act in some manner, either to declare legal or to condemn the sale of intoxicants on American vessels. All that a reading of the two opinions can do is to make clear the situation as it existed when Mr. Lasker answered Mr. Busch. Before the two opinions are quoted, however, it may be remarked that a quite able brief was submitted by J. Parker Kirlin, general counsel of the American Steamship Owners' Association, at a hearing before the commissioner of internal revenue, and that Mr. Kirlin's brief does lend much support to Mr. Schlesinger. But it is also true that it has no official status and was the argument of a confessedly interested party.

### Mr. Schlesinger's Ruling

Mr. Schlesinger's opinion, submitted to Mr. Lasker June 13, 1922, is in full as follows:

You have requested from me an opinion as to the right of American vessels, including those operated by the Shipping Board, to sell liquor outside of the three-mile limit. In my opinion neither the Eighteenth Amendment nor the Volstead Law applies to American ships outside the three-mile limit, and therefore, in my opinion, liquor may be sold on all American ships, including Shipping Board ships, outside the three-mile limit.

The Eighteenth Amendment provides that "the manufacture, sale, or transportation of intoxicating liquors within, the importation thereof into, or the exportation thereof from the United States and all territory subject to the jurisdiction thereof for beverage purposes is hereby prohibited."

The question narrows itself down to the legal interpretation of the words, as used in the amendment, "all territory subject to the jurisdiction thereof." Is an American ship, outside of the three-mile limit, "territory subject to the jurisdiction of the United States", in the sense that those words are used in the Eighteenth Amendment? It has long been an established rule of construction that, as Chief Justice Waite says in Tennessee v. Whitworth, 117 U. S. 139: "Words in a constitution as well as words in a statute are always to be given the meaning they have in common use, unless there are very strong reasons to the contrary."

It has again been said in the article on constitutional construction in 10 Fed. Stat. Annot., pp. 275, 276: "Words in the Constitution . . . are to be taken in the sense in which they were used and understood by common law and at the time the Constitution and the amendments were adopted."

The word "territory" at the time of the adoption of the Eighteenth Amendment had a clear and well defined legal meaning. The prior use of the word "territory" in the Constitution appears in Section 3 of Article 4, which provides as follows: "The Congress shall have power to dispose of and make all needful rules and regulations respecting the territory or other property, belonging to the United States."

This article of the Constitution came before the Supreme Court of the United States for construction in U. S. v. Gratiot, 14 Peters 526. Mr. Justice Thompson, in delivering the unanimous opinion of the court there defined the meaning of the word "territory" as follows: "The Constitution of the United States (Article 4, Section 3) provides: 'That Congress shall have power to dispose of and make all needful rules and regulations respecting the territory or other property belonging to the United States.' The term territory, as here used, is merely descriptive of one kind of property and is equivalent to the word lands."

As used in statutes of the United States, the word "territory" has been defined in at least four cases as a place, subject to the jurisdiction of the United States, which has an organized government with an executive, legislative and judicial system; and lands subject to the jurisdiction of the United States, which have no such organized government, have been held not to be territories. Kopel v. Bingham, 211 U. S. 468; Ex parte Morgan, 20 Fed. Rep. 298; in re Lane, 135 U. S. 443; Brunswick First National Bank v. Yankton County, 101 U. S. 133.

But finally, as if to make it plain beyond controversy that the amendment was dealing with territorial limits in a legal sense, Congress, in proposing the amendment, avoided the use of the wider language which had been embodied in the Thirteenth Amendment prohibiting slavery "within the United States or any place subject to their jurisdiction," and used the narrower, clearly defined terms "territory subject to the jurisdiction of the United States." It had previously been decided that there were "places" even on land that were subject to the jurisdiction of the United States which were not "territory." In re Lane, 135 U. S. 43, Ex parte Morgan, 20 Fed. Rep. 298, Kopel v. Bingham, 211 U. S. 468.

And in the National Prohibition cases recently decided, 253 U. S. 350, the Supreme Court held that prohibition "is operative throughout the entire territorial limits of the United States." The words "territorial limits" are words of limitation; they indicate the boundaries within which the prohibition lies. "Territorial limits" plainly means the limits of lands; "territorial limits" do not extend into or over the high seas.

A careful construction of the amendment itself conclusively bears out this construction. The amendment reads: "The manufacture, sale, or transportation of intoxicating liquors within, the importation thereof into, or the exportation thereof from the United States and all territory subject to the jurisdiction thereof for beverage purposes is hereby prohibited."

It would be a grotesque use of terms to speak of importing or exporting beverages into a ship on the high seas or from a ship on the high seas.

Finally, it seems to me the case of Scharrenberg v. Dollar Steamship Company, 245 U. S. 122, is conclusive of the question. In that case an Act of Congress made it a misdemeanor for any corporation in any way to assist or encourage the importation or migration of any contract laborer or contract laborers into the United States, and a contract laborer was by the statute defined as "one who comes to perform labor in this country." The Supreme Court held, to quote from the syllabus: "An American ship engaged in foreign commerce is not a part of the territory of the United States in the sense that seamen employed upon her while in American ports or on voyages can be said to be performing labor in this country within the meaning of the statutory provisions above cited"; and that "inducing and assisting aliens to come from abroad, working as seamen on the way, for bona fide service as seamen on an American ship during her voyage from American ports to foreign countries and while she lies in such ports preparatory to or in the course of such voyage, is not an assisting or encouraging of the importation or migration of alien 'contract laborers' into the United States."

And the Supreme Court said on page 127: "Equally unallowable is the contention that a ship of American registry engaged in foreign commerce is a part of the territory of the United States in such a sense that men employed on it can be said to be laboring 'in the United States' or 'performing labor in this country.' It is, of course, true that for the purposes of jurisdiction a ship, even on the high seas, is often said to be a part of the territory of the nation whose flag it flies. But in the physical sense this expression is obviously figurative (International Law Digest, Moore, vol. I, par. 174), and to expand the doctrine to the extent of treating seamen employed on such a ship as working in the country of its registry is quite impossible."

Acting Attorney General Frierson, in rendering his opinion on November 1, 1920, wholly fails to take this distinction into account, and by reason thereof arrives at an erroneous conclusion, and the two cases cited by him, in view of the special circumstances in those two cases, in no way bear out his contention.

Furthermore, it is a century-old principle of international law that ships are not territory in an actual sense, because, for example:

(a) They are subject to the jurisdiction of local authorities in foreign waters for the punishment of crimes committed on board in such waters.

(b) Neutral merchant ships may be seized on high seas and condemned by belligerents for carrying contraband of war.

(c) They may be seized, attached and sold under process in rem for claims in tort, or for debt, in our own or in a foreign country.

(d) Political refugees may be removed from them when they are in foreign waters; there is no right of asylum on merchant ships for such persons; 11 Moore's International Law Digest, 855, 858. Wildenhus' Case, 120 U. S. 859.

If they were actually territorial:

(a) No person could be seized or punished by a foreign nation for a crime committed within the actual territorial limits of the United States.

(b) No part of the actual territory of the United States can be seized or proceeded against by a foreign power for unlawful acts committed within such territory; complaint in respect of all such matters must be made to the sovereign.

(c) Actual territory can neither be seized, attached nor sold under process in rem or other process, for claims in tort or for debt; claims against any part of the national territory must be presented to the sovereign.

(d) There would be a right of asylum on board of them for political refugees; such refugees are protected within the actual territory of the United States.

As a matter of fact, according to Italian law it is necessary for a steamship company to furnish each member of its crew with a stipulated daily allowance of wine. Treasury decision No. 38,218 was promulgated on December 11, 1919, and required that all liquors, which are prohibited importation, but which are properly listed as sea stores on vessels arriving in the ports of the United States, should be placed under seal by the boarding officer and kept sealed during the entire time of the vessel's stay in port, and that no part thereof can be removed from under seal for use by the crew at meals or for any other purpose. The Italian Embassy appealed to our State Department for relief from this treasury regulation, and in an opinion rendered January 23, 1920, Attorney General Palmer himself rendered an opinion to the secretary of state that "so long as the liquors on board are properly listed as sea stores and are not excessive in quantity, I do not think their daily distribution on board the (Italian) ship can properly be interfered with by this government. I am, therefore, of the opinion that the regulation should be modified in the case above indicated." And in the same opinion the attorney general states: "With respect to American vessels it is sufficient to say that the prohibition law applies as well on board such vessels while in American ports as at any other points within the United States. As to such vessels I do not think that the validity of the regulations mentioned can be successfully questioned."

By implication this opinion of the attorney general limits the enforcement of the Prohibition Act to American ships while in port, and the treasury regulation itself has the same effect and in no way covers or attempts to cover the sale of liquors on American vessels while they are outside of the three-mile limit.

The Volstead Act itself contains no reference to the territorial limitations within which it shall be operative, and it follows axiomatically, of course, that it cannot extend beyond the limits defined by the Eighteenth Amendment, and that if the amendment itself does not apply to American ships beyond the three-mile limit, the Volstead Act itself cannot do so.

For these and other reasons which I will not here detail at length, I am of the foregoing opinion.

I hereby confirm the oral opinion which I rendered to you and the United States Shipping Board in July, 1921, after a careful review of the authorities. A further review just made, because of certain letters you have just received, does not indicate any reasons to cause me to change my opinion that the law is not being violated.

### Mr. Frierson's Opinion

Mr. Frierson's opinion, submitted to the secretary of the treasury November 1, 1920, answered two questions, one as to whether distilled liquors held on board American vessels were subject to floor tax under the Act of October 3, 1917, and the other as to the application of the Eighteenth Amendment to American vessels. The first portion, having no bearing here, is omitted. The second follows:

I have the honor to acknowledge receipt of your letter of July 19, 1920, in which you request an opinion upon the following questions of law:

* * * * * * *

"2. Whether the 'National Prohibition Act', Act of October 28, 1919 (41 Stat. 305), applies to intoxicating liquors, as defined in section 1, title II, of said act, on board American ships, when such ships are (1) at dock in this country; (2) on the high seas; (3) and in foreign waters."

You are advised as follows:

* * * * * * *

(2) The Eighteenth Amendment, by its terms, applies to the United States and to "all territory subject to the jurisdiction thereof." The National Prohibition Act does not contain any language limiting the territory within which it is to be in effect. It simply enacts that certain transactions with respect to intoxicating liquors shall be unlawful and provides "that any person" who violates its provisions shall be punished. It is clear, therefore, that this legislation prescribes rules of law which shall be in force wherever the laws of Congress are applicable. By virtue of the Eighteenth Amendment Congress is empowered to legislate on this subject without regard to state or other lines and with respect to all territory subject to the jurisdiction of the United States. Except, therefore, as its operation in particular possessions of the United States may be limited by special statutes applicable to those possessions, the National Prohibition Act is in force throughout the jurisdiction of the United States. The question then is whether it furnishes rules of law which govern those on board an American vessel. That it does so apply when the vessel is in American waters I think no one will doubt. The question then is whether it applies when the vessel is on the high seas or in foreign waters. This question also I think can now present no serious dispute. It was said in St. Clair v. United States, 15 U. S. 134, 151: "A vessel registered as a vessel of the United States is, in many respects, considered as a portion of its territory, and 'persons on board are protected and governed by the laws of the country to which the vessel belongs.'"

It follows, therefore, that persons on board an American vessel, wherever that vessel may be, are governed by the laws of the United States to which they would be subject if within the United States. Indeed, the jurisdiction of the Federal government over them is much broader than when they are within the United States. In the latter case, with respect to the great bulk of criminal laws, they are subject to the jurisdiction of the various states and not to that of the United States. The various states, however, have no jurisdiction even of their own citizens when on the high seas. For this reason Congress may enact, and the Federal government may enforce, criminal laws for the purpose of punishing offenders for offenses committed while on the high seas which it would not be within the power of Congress to make applicable to the same offense if committed within one of the states. Thus, Chapter III of the Revised Statutes, beginning with section 5339, contains a long list of offenses which if committed within one of the states would be beyond the power of the Federal government to punish and provides that when committed upon the high seas they shall be punished by the Federal government. In such cases it was, of course, necessary to have a special statute, for the reason that Congress has no power to enact laws for the punishment of murder and the other offenses mentioned in Chapter III of the Revised Statutes to be applicable generally throughout the United States. Any law, however, enacted by Congress within its power and made of general application is a law to which persons within the criminal jurisdiction of the United States are subject. The criminal jurisdiction of the United States is necessarily limited to their own territory, actual or constructive. After making this statement Mr. Justice Field, in United States v. Smiley, 6 Sawyer 640, 645, stated the rule of law determining the territory subject to the criminal jurisdiction of the United States as follows: "Their actual territory is coextensive with their possessions, including a marine league from their shores into the sea. . . . The constructive territory of the United States embraces vessels sailing under their flag; wherever they go they carry the laws of their country, and for a violation of them their officers and men may be subjected to punishment."

It was for this reason that the Supreme Court said in St. Clair v. United States, supra, that persons on board a vessel are protected and governed by the laws of the country to which the vessel belongs.

The Eighteenth Amendment empowers Congress to enact laws applicable wherever the jurisdiction of the United States exists. The National Prohibition Act is a law of such general application. I cannot doubt, therefore, that it applies to those on board American ships, whether in American waters, on the high seas, or in foreign waters equally with those in any of the states of the United States.

# FIFTY YEARS OF STRUGGLE

## One Failure After Another Has Characterized the History of the United States-Australasian Mail Service Since 1870

**The story of mail services between Australia and the United States is one of repeated failure. Thousands if not millions of dollars have been sunk by private companies and by governments, but today the net result, from the American point of view, is a single steamship line operating two vessels, and even this one line, the Oceanic, would have been compelled to withdraw had it not found the United States government willing to discuss a new and more liberal contract. In the history of the Australian trade will be found an effective reply to those gentlemen who insist that steamship lines always can maintain themselves without government aid.**

THE expiration of the Oceanic Steamship Company's Australasian mail contract June 30 and the negotiations for a continuation of the service that have been carried on between the company and the United States government have made of timely interest a history of the different efforts to establish and maintain an Australasian - San Francisco mail line during the last fifty years. The following account narrates in some detail the experiences of several steamship companies after 1869.

### Between England and Australia

It was in the year 1869, after the cessation of the Panama service, that Lieutenant G. A. Woods, Colonial mail surveyor, was instructed to frame a report on the best routes for a mail service between Australia and England via America. He urged the claims of the route via Tahiti for reasons somewhat similar to those put forward by Captain Hall in advocating the use of the Island of Opara as a coaling station in the Panama run. "Assuming Sydney to be the port of departure and Auckland to be made the port of call for New Zealand, the distance to San Francisco via Auckland is 6945¾ miles, while the distance via Auckland and Tahiti is 7140 miles," said Mr. Woods. . . . "Supposing Wellington to be the port of call, the distance is 7083 miles via Wellington and 7190 miles via Tahiti. With respect to all distances, the total route via Wellington and Tahiti is only a small increase of 50 miles over that via Auckland and Tahiti. But by making Wellington the port of call the steamers would gain all the advantages to be gained from the prevailing westerly winds south of the equator to carry them into that part of the Pacific Ocean where the trade winds are regularly established throughout the year. . . . . After carefully considering the question from the nautical point of view, I am of the opinion that the most advantageous route for an ocean postal service to San Francisco for the benefit of the Australian colonies and New Zealand would be with Sydney as the port of arrival and departure (until there are facilities in Wellington for the docking of large ships), the vessels calling at Wellington and Tahiti en route, and I calculate the voyage could be easily accomplished with vessels of 2500 tons from Sydney to Wellington, 4 days; Wellington to Tahiti, 8 days; Tahiti to San Francisco, 13 days; total, 25 days. Add to this stoppages of 2 days and the time occupied in going from San Francisco to New York, 6 days, and by Cunard's from New York to Liverpool, 10 days."

### Thirty-eight Days to London

This scheme was designed to bring Wellington within 38 days of London fifty years ago in the days of 10- or 12-knot steamers. Mr. Woods' report, however, was not adopted at that time; not, in fact, until forty years later.

New York and San Francisco had just been linked by the railway, and San Francisco had sprung into prominence as the natural Pacific port of the United States. Shipping companies transferred their patronage from Panama to San Francisco, and new steamship lines came into existence. A fleet of 3000-ton steamers was equipped for service between San Francisco and Japan and China. The South American services were extended further south. It was an epoch that marked the entry of mercantile America into the ocean services of the Pacific. And it was natural that the eyes of ambitious Americans should be turned to far-away Australasia. The quickest route to London from Sydney appeared to lie across the greatest republic on earth, and that republic was not slow in pressing its claims. In the year 1870 the first San Francisco service was run, the beginning of a fifty-year war with time and distance, the history of which is a record of ambitious aims and fast passages marred again and again by bitter failures.

### Distrust Is Evident

When it was decided to establish a steam mail service between Sydney and San Francisco, the Atlantic & Pacific Steamship Corporation offered to run the steamers Ruahine, Kaikoura and Rakaia, formerly on the Panama Line, but this offer was declined on the ground that the vessels were too small. Pending a definite scheme being devised, the offer of H. H. Hall, American consul at Sydney, to run a temporary monthly service was accepted. This arrangement was carried on from month to month at a cost of £1000 a month to the New South Wales and New Zealand governments, the liability being equally divided. There appears to have been a certain amount of distrust evidenced by all the parties to this contract, and on more than one occasion the captains refused to land the mails until the subsidy was paid. Mr. Hall chartered the A. S. N. Company's steamers Rangatira and Balclutha. These connected at Honolulu with the Northern Pacific Company's Ajax, which plied between that port and Honolulu. The Rangatira and Balclutha were soon replaced by the City of Melbourne and Wonga Wonga. On several occasions these vessels had to steam from Honolulu to Sydney burning wood, as the Honolulu coal suppliers declined to make any but cash transactions with the mail contractor, and apparently the cash was not always available.

### Californian Line's Contract

In 1871 negotiations that had been proceeding resulted in an agreement being made by Mr. Webb, senior partner for the firm of Webb & Holladay, who operated the Californian Line, to run a fleet of four paddle-wheel steamers between Sydney and San Francisco, calling at Auckland and Honolulu. These steamers were of considerable size, as the dimensions show:

| | | |
|---|---|---|
| Nevada .......... | 2145 tons net, | 850 H. P. (nominal). |
| Nebraska ...... | 2143 tons net, | 850 H. P. |
| Dacotah ........ | 2145 tons net, | 850 H. P. |
| Moses Taylor | 1354 tons net, | 500 H. P. |

The first three of these steamers were built during the year 1867 at New York of wood and classed A-1 at Lloyd's for a period of seven years. No expense had been spared in their construction, as their owner, Mr. Webb, built them with a view of selling them to the Federal government for service as transports during the American Civil War. But the government merely chartered them, and at the conclusion of the war Mr. Webb had the vessels on his hands, and after running them in the West Indian trade for a time sent the Nevada and Nebraska around Cape Horn and up to San Francisco, where there seemed more profitable charters offering.

From the News of the World, published in San Francisco, the following account is taken of the appointments of these vessels at the time of their entering the Australasian trade:

"The Nebraska and Nevada are sister ships in size, cabin accommodation and power; 3000 tons burden; built of live oak, double-planked 4 inches thick, iron-stripped. On a trial the Nebraska averaged 15 knots an hour. She will average a speed of 340 miles a day when working up to full power, and is looked upon as the fastest ship on this coast. Running along the center of the deck are twenty beautiful staterooms, each having a close and Venetian door opening on to the deck and a window 32 inches square. These staterooms are all double with doors on either side and ventilators on top. Contrast these beautiful windows with the augur-holes of the Wonga Wonga! Right aft is the ladies' sitting-room, well fitted up, private and well ventilated. Forward of this is the smokeroom, fitted up with a degree of comfort seldom seen on board ship. On the main deck is the grand saloon, 90 feet long, 28 feet wide and 8 feet high. On each side of this saloon is a row of staterooms opening on the deck and accommodating eighty passengers, with two bridal chambers in the forward part of the saloon. The berth deck is occupied by the third-class passengers, and will accommodate 620 of this class. Abaft this there are forty well ventilated staterooms for second-class passengers. The sleeping and other accommodations come up to the standard of first-class on the City of Melbourne. For extinguishing fire an iron pipe leading through the whole length of the ship has some 15 branches of hose always connected with water and steam available. There are lifeboats capable of carrying 830 passengers. There are life buoys in every berth. The Australians returned from their visit to the Nevada and Nebraska fully satisfied that no such ships had ever visited Australasian waters."

### Service Opened by Nebraska

The Nebraska opened the service, sailing from San Francisco April 8, 1871. The Dacotah, which followed the Nebraska and Nevada, arrived at Australia in 1873. She carried the highest pressure of steam, 60 pounds to the square inch, against the other vessels' 20 pounds, and this high pressure was the cause of endless trouble, for cylinders were not bored so accurately as they are now, and with high pressure much leakage past the piston occurred. In addition to this, the marine condenser was in its most primitive form, and there was a difficulty in condensing the Dacotah's steam. These vessels were typical American paddle steamers. In those days paddles were fitted in all American built steamers, and the engine used was the single-cylinder beam engine. In the vessels of the Californian Line this cylinder was set in a vertical position. The piston rod worked straight upwards and was attached to one extremity of a horizontal beam, which pivoted at its center to a pillar on the deck near the funnel. From the other end of this beam a connecting rod communicated with the paddle crank, the crank having a 12-foot stroke. As may be judged, the machinery was titanic in its proportions. Had it not been so colossal, it would never have whirled the 30-foot paddles as it did, for in proper trim the steamers sometimes attained a 17-knot speed. When so trimmed they were exceedingly fast vessels for their time. The trimming of the paddles, however, affected the speed materially, and when heavily loaded the floats choked in leaving the water, resulting in a dragging that reduced the speed to 11 knots.

### "He Grazed Something"

It may be that during their war-time service the Nevada and Nebraska acquired their semi-military and naval style. At any rate, when they were running the San Francisco mail their commanders carried on in a high-handed manner. They allowed no one to forget that they were the mail. Leaving port they fired guns, and when they signaled for a pilot, were it early dawn or after dark, they demanded quick dispatch. Old seafarers tell a story of one of these American skippers who was bound from Auckland to Sydney. He was running late and beating the seas to white foam in his path in his efforts to pick up time. One night a small bark loomed suddenly in his path, and though the steamer's helm was put hard over one of the paddle-boxes struck the sailing ship with sufficient force to cause her to founder the next day. The mail boat never paused, though her port paddle-box was damaged and some of the paddle-floats broken. On arrival at Sydney the captain "guessed he grazed something" on the way across. The captain of the bark with his wife and child and the ship's company took to the boats and were rescued by a passing ship the next day, most fortunately, as it proved, for a southeast gale arose soon after their rescue. When the full account of the accident reached Sydney there was much indignation against the steamboat captain, and during the several subsequent visits he paid to Sydney he was subjected to a good deal of candid criticism. Nothing, however, could be done officially, as his ship flew the American flag, and the American authorities apparently did not consider that the occurrence demanded an inquiry. The steamer was the Nevada and the sailer was the bark A. H. Badger.

### Subsidy Is Withdrawn

The effect of the long sea runs on machinery designed only for river and coastal work soon began to be manifest. The Nevada was the subject of inquiry by the Australian and New Zealand postmasters as to her fitness to carry passengers. Her crankshaft was reported to have a bad flaw in it, and owing to this and to leaky boilers it was found necessary to reduce her steam pressure to six pounds a square inch. Retribution came to her owners from a quarter whence it was least expected. Some passengers sent a protest to the United States at the time when the Ship Subsidy Bill was before Congress, and Congress promptly withdrew the subsidy to the line. The Moses Taylor, a smaller vessel, made the connection between San Francisco and Honolulu. In April, 1872, she failed to reach Honolulu in time to connect with the Nebraska, which was taken right through to San Francisco, thus causing a gap in the service that evoked protests from the Australian and New Zealand premiers. Being in disfavor on both sides of the Pacific, the Californian Line soon ceased operations, the Nebraska, sailing from Sydney in April, 1873, being the last of the fleet to visit Australasian waters. This vessel appears to have been the best of the lot. Some of her steaming times are interesting:

| | Days | Hours |
|---|---|---|
| San Francisco to Honolulu | 7 | 15½ |
| Honolulu to Auckland | 14 | 16½ |
| Auckland to Sydney | 4 | 11 |
| Total | 26 | 19 |

For a few trips at the beginning of the service these steamers forked alternately at Auckland for Sydney and Port Chalmers. On the latter route they called at Napier, Wellington and Lyttleton en route.

### Another Temporary Service

On the cessation of this service H. H. Hall again began running a temporary service with the steamers Mongol and Tartar, chartered from their owners, the New York, London & China Steamship Company. They were sister ships of 2000 tons register. The Mongol arrived at Port Chalmers from Liverpool on February 13, 1874, after a voyage of 49½ days. The steamer McGregor also engaged in the service and on September 15, 1874, arrived at Auckland with 2500 letters and 80,000 newspapers for New Zealand and 132 bags for Australia. The captain refused to land the New Zealand mails until he was paid the subsidy for that voyage.

The routes followed were from Sydney to Kandavau in Fiji and from Dunedin to Kandavau. At the last port transshipment was made sometimes, and at other times the steamers ran right through to San Francisco. Soon after the service started an effort was made by merchants of Levuka to have the mail boats call there instead of at Kandavau, but without success. The Granada was the Honolulu-San Francisco steamer, though occasionally she visited Australasia. At the end of 1874 the Cyphrenes and Mikado replaced the Tartar and Mongol, which returned to America, and later the A. S. N. Company's City of Melbourne, fitted with new compound engines, ran a few trips, making one notably fast voyage of 26 steaming days from Sydney to San Francisco. About this time an offer was made by the North German Lloyd Company to run 2500-ton steamers on the San Francisco Line, but the offer was declined in favor of one made by the American Pacific Mail Company in conjunction with the Fairfield Shipbuilding Company of Glasgow, builders and owners of the steamers Zealandia and Australia. Before Mr. Hall and his partner, P. S. Forbes, relinquished their mail running, they incurred a penalty of £10,000 for a breach of contract. After protracted litigation a Mr. Cunningham, one of their sureties, paid £5000 to the New South Wales government and a like sum to New Zealand.

### Pacific Mail Appears

The Pacific Mail Company had a large trade with China and Japan and a good financial connection in the United States, and it was hoped by contracting with this company to get quick dispatch for the English mails across the American continent. The service under the company's flag was performed by the following steamers: Vasco De Gama, Colima, City of San Francisco, City of New York, City of Sydney, Zealandia and Australia. A San Francisco newspaper thus noted the beginning of the Pacific Company's contract:

"The Australian contract with the Pacific Mail Company is to be inaugurated on the 12th September, 1875, by the despatch of the Colima for Sydney. This is one of the fastest boats the Pacific Company own. The Vasco De Gama is to follow in October, but at present is reported wrecked at Nanaimo. The new steamers City of Washington, City of San Francisco and City of Sydney are to leave New York at once to take up the Australian running. They are to be the permanent boats with the others built in Scotland."

### Hooted by Passengers

The City of New York appears to have been substituted for the City of Washington, or maybe the newspaper was misinformed as to the names of the vessels. The Vasco De Gama and the Colima were employed pending the arrival of the regular steamers of the line, and their ultimate withdrawal seems to have been warranted by their general unfitness for passenger traffic. The Colima repeatedly broke down, and on one occasion when she arrived at Kandavau from Australia her passengers hooted her. The three Cities were built at Chester, Pennsylvania, in 1875, and were handsome steamers of 3000 tons burden, three-masted and having one funnel. On one occasion the City of San Francisco ran from Auckland to San Francisco in 24 days 12 hours, this being 34 hours under contract time. The steamers Zealandia and Australia, built by the Fairfield Shipbuilding Company of Glasgow, were four-masted steamers with one funnel; their tonnage was 2737 gross and 1714 net measurement; their nominal horsepower was 500. The Pacific Company's service was actually begun by the Colima, which left San Francisco November 10, 1875. The Vasco De Gama sailed from Sydney on November 19, 1875, but as she was not to follow the contract route the New South Wales government declined to send mails by her.

Before her retirement from the service the Colima broke a crankshaft off Banks Peninsula and was towed into Lyttleton by the Union Company's Maori. One of the Cities on her way from San Francisco to Honolulu cracked her high-pressure piston head, but this mishap did not dismay the skipper, who reached Honolulu under one engine. Furthermore he engaged a tug to tow him clear of Honolulu harbor and then went on to Auckland using one cylinder, thus earning the subsidy despite the fact that he arrived some days late.

In 1877 the route via the Fijis was abandoned in favor of the Honolulu course, as the Fijis were considered by the seamen and underwriters to be unsafe for night running.

### Oceanic-Union Joint Contract

The Pacific Mail Company's last contract expired in the year 1885, and as there were rumors of the establishment of an ocean mail service on the proposed All Red Route this company did not tender for further service. Negotiations began in which three shipowning firms were concerned, the Oceanic Company of America, the Union Steamship Company of New Zealand, and the Fairfield Company, which still had the steamers Australia and Zealandia. The Fairfield Company eventually dropped out of the arrangement. After a great deal of correspondence and consideration, a three years' contract was secured jointly by the Oceanic Company of America and the Union Steamship Company of New Zealand. The Oceanic ships were the Alameda and Mariposa, built in 1884, of 3158 tons gross measurement, 1959 net, engines of 3000 horsepower indicated, and in cabin arrangements closely resembling the Wairapa and Manapouri. The Union Company's steamer was the Mararoa of 2598 tons and 3500 horsepower, a ship well known in Australasian waters. She arrived at Sydney in November, 1885, a new vessel, and sailed in charge of Captain Eddie December 3 on her maiden voyage to San Francisco, where her officers were entertained to celebrate the arrival of this, the first triple-expansion steamer in San Francisco Bay.

Meanwhile the Alameda left San Francisco November 21 of the same year. Six hundred hours was allowed for the through trip. The Southern New Zealand mail was run down from Auckland via Onehunga and the West Coast, and it was about this time that the Takapuna entered into service between Dunedin and Manakau, having been specially built to negotiate the bar and to maintain a high speed at sea.

### Union Withdraws Temporarily

After one or two runs the Mararoa's mail room was found to be too small. In consequence she was withdrawn, and the old Zealandia was chartered by the Oceanic Company to replace her. The terms of the contract provided that the Union was to run one vessel and the Oceanic Company two, but having no suitable steamer, the Union Company allowed J. D. Spreckels, who virtually was the Oceanic Company, to run three. This concession gave rise to a little trouble in 1890, when the Union Company's liner Monowai of 3433 tons and 3000 horsepower arrived in New Zealand and entered the service, taking the outward December mails from Sydney. The chartered steamer Zealandia was also timed to sail, having carried the mails down, and the Oceanic Company protested against the Monowai taking the mail when one of its ships was available. The Union Company, however, was merely adhering to the terms of the contract. Both ships sailed almost simultaneously, and the result was an ocean race across the Pacific, in which the Zealandia beat the Monowai by 19 hours. The Zealandia then retired from the San Francisco mail service after fifteen years' running on the route.

In 1894 the Monowai made a record run from San Francisco, landing her mail in New Zealand 31 days after despatch from London. Yet despite this record the Monowai was considered by the New Zealand government to be too slow. Her owners explained that, owing to the high cost of coal in San Francisco, she carried from New Zealand sufficient coal for the round trip, so that on her outward voyage from New Zealand she was deeply laden and her speed consequently was slow. Then the Union Company chartered the Shaw Savill Company's old Arawa to replace the Monowai. The Arawa held the record for the fastest run of 34 days 17 hours 23 minutes from London to Wellington via the Cape, and it was expected she would do well on the Pacific route. But after one or two trips it was found necessary to make alterations to her boilers. For this purpose she went to England, and the Monowai resumed her running. The Union Company then decided to build a new ship for the San Francisco service. The Moana of 3915 tons and 4500 horsepower was built in 1896 and took up the Monowai's running in 1897.

### Present Service Begun

In 1900, two years after the annexation of Hawaii, the American coastwise laws were extended to that archipelago, so that the Moana could not engage in the Honolulu-San Francisco service, and as Mr. Spreckels had been granted the American subsidy the New Zealand government decided to subsidize his steamers also. In justification of this step it was stated that the cost of running an independent line of British ships would have been prohibitive. The Moana entered the Vancouver service; the Alameda and Mariposa were withdrawn; and a three-weekly service was inaugurated November 21, 1900, by the Sierra from San Francisco. She was followed by the Sonoma and the Ventura. The two latter vessels remain in the service today.

# THE LAST U. S. S. B. VESSEL

The Western World

THE steamship Western World, latest of the 535-foot liners built for the United States Shipping Board, has been put in the South American service by the Munson Steamship Line and sailed May 17 on her maiden trip to Rio de Janeiro and Buenos Aires. The other Munson liners at present in the South American service are the Pan America, the Southern Cross and the American Legion, all vessels of the same size and type of the Western World.

The Western World is the last of five vessels of this type built by the Sparrows Point plant of the Bethlehem Shipbuilding Corporation, Ltd., at Sparrows Point, Maryland. She was delivered to the Shipping Board May 9, after one of the most thorough and satisfactory deep-sea trials to which any vessel of her type has been subjected. On her run from the shipyard at Baltimore to New York she made the best record of any ship of her class, covering the distance of 413 nautical miles in 22 hours, or at an average speed of 18.8 knots. The best previous time for this run was 26 hours.

Like the other three vessels in the same service, the Western World is an oil burner. She is equipped with the complete Bethlehem-Dahl mechanical system. There are eight Yarrow express type watertube boilers, each fitted with three furnace fronts and oil burners, making a total of twenty-four burners on the ship. The Pan America, placed in service but a few months ago, is fitted with the same type of oil-burning equipment. On her first voyage to South America the fuel oil consumption was surprisingly low and her behavior in general very satisfactory.

# THE EXPORT CATALOG

## "Anything Will Do for the Foreigner" is too Often the Maxim of the American Exporter, Says an Authority

By LORING G. PEEDE*

A FEW new editions of American export catalogs are beginning to blossom forth again after several seasons of export drought. This is interesting not only to exporters but to all whose ships plow furrows in the Seven Seas and who hope to see the waterlines of those vessels settle down comfortably to the level of the lapping waves before casting off from their docks. It is interesting because these exporters who are methodically preparing for business now are going to be booking larger cargo space next summer, next fall and next year. They are, therefore, worth watching and catering to now.

### Good Enough for the Foreigner

The export catalog is a factor of international trade of somewhat unappreciated potentiality. At least, that condition seems to have proved true to date. To many manufacturers a catalog is just a catalog, foreign or domestic, for in considering foreign markets particularly many seem to feel that any kind of a publication in any language, and any kind of language, for that matter, will serve to bring in the orders from parts unknown. Walter Wyman, organizer of the well-known Boston Round Table and manager of the export department of Carter's Ink Company, tells of a friend who was hired as export manager by a manufacturer for no other reason (as nearly as he could figure out) than that the manufacturer had on hand several thousand domestic catalogs that cost nothing because of a printer's error. These catalogs were in English, of course, but as one of the partners told the export manager: "They are full of pictures, and those foreigners will be tickled to see what a real hardware line looks like." Fortunately there are American hardware manufacturers who do know the export game, and know it well, whose catalogs are exhaustive encyclopedias of their wares readily understandable by their foreign clients. It is no mere coincidence, either, that the hardware makers who have put the most thought, time and investment into their foreign catalogs are in each case the manufacturers who month in and month out ship the largest invoices of hardware overseas.

### What Sort Is Coming

The activities of many foreign departments can be made to revolve successfully around the export catalog and the supplements that may be issued to it. If the catalog is right it will serve to carry on whether agent or salesmen are on the ground or not. If the catalog is inadequate or unconvincing it will meet the same fate as the ineffective salesman who sees his competitor walk off with the order almost under his own nose. One question that should interest all who await the re-expansion of our foreign trade is: what sort of a crop of American foreign catalogs is the coming season going to scatter over the face of a war-shattered globe? There is no doubt that, irrespective of all other efforts of export managers, much will depend on the sales qualities of those catalogs. A margin of profit, in the sense in which export volume is so measured, lies in how those catalogs are compiled, presented and distributed. Fortunately there is no special talent required for compiling an export catalog that the export manager himself with the aid of his advertising manager should not have already at hand and in use in his daily work. Catalog problems vary, of course, with each business, but the fundamental principles are the same for all lines, and if the export manager will give each detail of issuing his catalog the same attention he devotes to his current business he will be amply rewarded for the time invested.

### Types of Catalogs

Although there are no secrets or hidden mysteries about the preparation of a serviceable export catalog, there are, however, many points to be considered both in its planning and its execution. In a brief way this article will touch on the most important of these points. If we blaze a trail into this forest of detail our part is done. All who follow must pick and choose their way according to the light of their own needs, but we offer at least a few marks to guide them.

Export catalogs can be sorted roughly into three groups: light periodicals, heavy annuals and permanent loose leaf. To take care of various trades and to present their stories in the several necessary languages one firm may issue more than one catalog. In some instances one catalog will be of one of the above types and a second edition may be of another, as conditions require.

Manufacturers who turn out a line consisting of few items naturally will need only a small catalog (light periodical). Their catalog problems are comparatively simple so far as investment in time and money is concerned. Usually they can afford to issue the catalog frequently in order to keep its text and illustrations up to date and to issue special editions in any language, such as Spanish, French, German or Portuguese, if the potential trade in countries speaking these languages in any way warrants the nominal expense required. Such catalogs are usually of 16, 32, 48 or 64 pages, bound in light covers, mailed in manila envelopes and in most ways not much more than a good, substantial booklet in appearance and in cost. Pages about 6 by 9 or 9 by 12 inches are sure to work out satisfactorily for this or any class of catalog depending on the nature of the goods to be illustrated. Small pocket-size catalogs may, in some instances, be just as effective, although as a general rule the larger sizes are likely to get the message (especially if it be illustrated) over more effectively.

### For Manufacturers of Varied Lines

Then again there are lines that are varied, that require hundreds or even thousands of illustrations to represent them adequately to the prospective buyer. Exporters of such lines must choose between issuing a comprehensive bound catalog about once a year to be up to date (the heavy annual) or putting out a permanent loose leaf. The factor that mainly determines a decision is the frequency of change in the items of the line and the necessity of frequent price change if the prices accompany the illustrations and description. If the changes are extensive from season to season, as they might be with garments that follow Continental fashions, then the whole book had better be revised each year or season. If the major portion of the line remains staple, as, say, in electrical equipment, and new items are added during the course of the year, then the permanent loose leaf catalog with supplements as required will best fill the bill. Too much thought cannot be invested in planning the loose leaf type of catalog. The cover and binding patent must be practical and workable. Cover materials must be such as will stand up under tropical humidity (this means extra reinforcement to prevent bindings ungluing and the use of no leathers that will mold or rot in the tropics). No importer wishes to employ a mechanic to insert new leaves in a catalog that may be of but casual interest to him, so the more simple the binding device the more likelihood there is that he will actually insert the pages (it is enough to offer the suggestion that one screw in the binding is sufficient if the binder is of the screw type and the slot wide and deep enough to permit opening it with any coin or key).

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* Formerly assistant manager of the foreign department of the Waltham Watch Company.

### Catalog Is a Salesman

The catalog is in reality a vehicle that carries, demonstrates and sells the sample articles illustrated on its pages. It is hard work to sell from a poor sample. No salesman would think of taking out a sample faded, battered or crumpled, yet many catalogs (both export and domestic) are full of illustrations that give just such an impression. That is a big handicap for any salesman, especially so for the helpless, mute catalog, which, being salesman and samples all in one, loses its prestige as a salesman at the instant it displays its defective samples. Modern photography, line drawings for commercial purposes, color art and modern photo-engraving, printing and lithography are all arts in themselves. If you wish the catalog to sell goods, equip it with real samples; get the best there is in advice and workmanship in any of the above processes; let the price be secondary. Do not stop at spending enough to get the job done right. The exporter who issues a catalog to save money is going about it in the wrong way; he might save it all by issuing no catalog. Imagine what the prospective buyer in Tasmania or Paraguay will be thinking of when he looks at the illustrations in your catalog (as an export manager you should have some line on that); then be sure the illustrations overcome any suspicions he may have about makes of goods in your line unknown to him.

### Domestic Editions of No Value

Most export catalogs are revisions or translations of domestic editions, or both. The best catalog for foreign trade is one that is compiled page by page to meet the needs and thought and customs of the people for whom it is intended. Seldom will a domestic catalog serve. The compilation of export catalogs is a large subject with infinite ramifications. Keep to the following rules, however, and your catalog will come near the mark, at least: (1) Assume nothing regarding the foreigner's knowledge of American goods or trade catalogs. (2) Tell him everything that there is to know about the article almost as though he never heard of it before (probably he hasn't). (3) Be explicit, not general, and avoid superlatives when other manufacturers might use them as well, at least to their own minds. Give dimensions, measurements, power, speed, etc., in terms that the other fellow will understand, whether it be length expressed by the metric system or energy in terms of mule-power. (4) Do not stress minor improvements in your product that may momentarily outshine those of your competitors here in the States. Perhaps there are other features of your product that carry more weight with the prospective buyer in Durban or Hongkong who previously bought such articles from England or France. (5) In introducing your wares picture your position in the markets of the world, your policy and your history from an angle that will mean something to the distant buyer. You may impress him more by making your story fit into the picture of your industry as he already sees it than by crudely undervaluing all that he has been taught to accredit. This last is a good way to get his confidence and is exactly what you would do if you yourself were selling your line on the foreign field.

### Regarding Catalog Policies

Every problem that enters into the selling of merchandise abroad must be considered in presenting that merchandise through the medium of a catalog. The same line of logic used at arriving at sales policies will serve also to arrive at catalog policies. A few examples:

Prices: If your merchandise is of such a character that you find it better to stick or tie price tickets on the actual samples used by your salesman, you probably will find it equally satisfactory to put your prices alongside of your illustrations or descriptions in the catalog rather than in a separate price list.

Terms and Discounts: It is safe to state your terms and discounts in such a way that no misunderstanding can occur in any circumstances with any class of trade. Long list prices are usually considered better protection to the importer and quantity discounts are usually better left out of the catalog, as they are generally of a more or less confidential nature.

Packing and Shipping: A sore point, this, with many of our friends abroad, as we have often heard. Better convince the prospect from the start that you know how to pack and ship goods the right way for safe carriage to his country. A good idea, too, to show him by photographic illustration an actual sample of packing for a round-world shipment giving its net and gross weight, tare, resistant strength, waterproof properties, etc.

Translation: This presents the greatest of all difficulties to the catalog compiler. It is the least understood of all problems involved. As has been suggested above, most foreign catalogs should be especially written to fit their markets, not translated from the domestic edition. Few would have on their staffs, however, men to write the catalog directly in a foreign tongue; therefore translation is essential in any case. The subject is much too complicated to treat in detail in a general article of this nature, so once again the liberty is taken of laying down a few general rules for guidance: (1) As it is seldom possible to find a translator with a thorough technical knowledge of a particular subject and a classical education, it is often advisable to employ two translators for the various classes of translation, general and technical. (2) Have the work of the technical translator checked for rhetorical excellence by the other translator, who may be a better writer. He at the same time may check his own work for variation in technical terms. (3) Whenever variations and difficulties show up, a conference between the compilor and translators often will serve to make meanings clear and insure correct translations. (4) When several terms are used for the same article in various countries (as, for instance, in the several countries of Spanish-speaking Latin America) references to the terms used in listing the article in the customs tariff manuals (original Spanish editions obtainable at consulates) will give the correct consensus of the use of any such words.

If there are any who doubt the need for exhaustive research and care in translation let them read the following gems of Spanish from catalogs published by American manufacturers in recent years:

In a catalog issued by a sewing machine manufacturer, the expression "rotary family sewing machine" was translated "Maquina de coser para Familias Geratorias", which means "sewing machines for rotary families."

A Cincinnati carriage manufacturer recently issued a catalogue in which the word "buggy", meaning a vehicle, was translated as "chinchero", the popular meaning of which is a place where bugs abound, and he is still wondering why his catalogs do not pay.

A harness and saddle manufacturer got out an elaborate catalog with a handsome cover design and the wording "We Lead the World." The translator, with the aid of the ever-ready dictionary, translated it as "Nosotros plomo el mundo", the word "plomo" meaning lead (metal) instead of the verb "to lead."

### How They Should be Mailed

A few cases of new catalogs fresh off the presses are like so many white elephants on your hands until they are out and in the hands of the buyers. Promiscuous mailing of expensive catalogs is about as wasteful as any form of attempted advertising that can be undertaken, and as likely to be non-productive as any. One catalog placed in the right manner in the hands of a prospective buyer is likely to produce more business than a truck load sent recklessly to lists of merchants in directories long out of date or to students who want to learn English from free textbooks. Catalogs sent wholesale to the foreign agent for distribution in his territory often get no farther than the agent's warehouse because they are not packed ready for remailing and because no definite arrangement is made with the agent to pay for the cost of mailing them.

Any export manager can afford to work overtime to plan a comprehensive scheme for distributing catalogs in the lands where orders grow, yet we fear this detail is still often left to the initiative of some office assistant. Look over the crop of export catalogs this season. They will indicate who will be on the export map in bold face next season and in the seasons to come.

# IMPROVEMENTS IN GRAND CANAL OF CHINA

THE Grand Canal of China is the longest waterway in existence and one of the most ancient, says John K. Davis, United States consul at Nanking, in Commerce Reports. Its length is approximately 1100 miles, with the northern terminus at Peking and the southern at Hangchow. In its course it crosses three important rivers, the Yellow, the Hwai and the Yangtze. The canal is of immense potential and considerable actual importance to four large and rich provinces of the Chinese Republic, in that it furnishes one of their most important traffic routes. Its improvement is of great value, therefore, to all American firms having business in the lower Yangtze Valley.

### Pre-War Efforts at Improvement

In 1910, owing to the silting up of the Grand Canal as a result of the diversion of the Hwai River by the Yellow, serious floods occurred, and attention was drawn to the necessity of adequate improvements. Under Mr. Chang Chien, a survey bureau was organized, and in 1912 the Hwai river report was published. This led to arrangements, in 1914, for a $20,000,000 loan from American interests, and a group of prominent American engineers was sent to study the problem. The outbreak of the war stopped development of the project.

In 1916, American capital ($3,000,000) was again pledged for the improvement of the Grand Canal between the Yangtze river and the border of the Shantung province. An agreement was signed in 1917 by the same American corporation with representatives of the Chinese government for a loan of $6,000,000 (United States currency) for improving the canal south of Tientsin in the provinces of Chi-li and Shantung. Surveys were made in 1918 and 1919 by American engineers: although no work has yet been done, owing to conditions growing out of the World War, the contracts still stand, and it is anticipated that the work will eventually be accomplished.

### Present Work on Amelioration

In 1920 the Kiangsu Grand Canal Board was organized, with headquarters at Yangchow. It employs one American engineer and its revenues are derived from provincial taxation. Pending the putting into effect of the loan agreements just described, this board is endeavoring to attend to those problems of the greatest immediate urgency, in order to permit the continued use of the canal.

Scene on a canal in the Yangtze delta

The sections of the waterway most in need of attention are those paralleling the Kaoyu and Kaishow lakes. Here, as a result of the frequent floods during the past twenty-five years, the silting has rendered navigation difficult during low water. In January, 1922, work was commenced on the deepening of the section between the town of Kaoyu, located twenty-five miles north of the Yangtze river, and Mapungwan, ten miles farther north. Temporary dams have been constructed and the ten-mile section between them is being drained for excavation; another ten miles to the north will be similarly handled. In order that navigation may not be entirely stopped during the three or four months which it is estimated the work will require, openings between the canal and Kaoyu lake have been made just below and just above the section under repair, making it possible for shallow-draft boats to pass.

While the excavation of this twenty-mile stretch will not solve the problem of the Grand Canal in Kiangsu province, pending the comprehensive improvements awaiting more favorable auspices, it will greatly ameliorate the situation in the section immediately north of Yangtze river, not only benefiting navigation but also draining off the surplus water of the Hwai river system.

# IN THE GRAVEYARD WATCH

## The Original Annexationist
## Mr. Kamaipelekane

SEVERAL YEARS AGO President Cleveland entered the anteroom of his office to find a sunburned stranger and a large bundle occupying a considerable portion of the room. "Who are you?" inquired the President. "And what's that you have?" "These are islands," replied the stranger. "Niihau, Kahoolawe, Molokini, Lanai, Oah—" "Where did you get them?" interrupted Mr. Cleveland. "And I never could pronounce their names, anyway. Here's your hat. And be sure to close the door gently."

Such, briefly told, was the manner in which the President disposed of the importunate stranger from Honolulu, who had gone to Washington with the expressed intention of forcing into the reluctant fingers of Uncle Sam the Hawaiian archipelago. The Honolulan returned home, as almost anyone would have done after he had been requested to depart; but a few years later he had the pleasure of receiving from another President, McKinley by name, a letter that ran substantially thus: "If you should happen to be in Washington, I hope that you'll drop in for tea. And you might bring those islands along. We can make room for them somewhere."

The stranger from Honolulu, who bore the title of commissioner from Hawaii, thus became The Original Annexationist. Although a mere youngster he had had quite an important role in deposing Queen Liliuokalani, the last of the native Hawaiian monarchs; he had been high in the councils of the Provisional Government, and had taken the lead in attempting to make Hawaii a portion of the United States. In view, therefore, of his early activities, it is not at all surprising to discover that Lorrin A. Thurston cannot break himself of his annexation proclivities.

Several weeks ago he embarked on a sampan for a cruise to Palmyra Island. Now a sampan, however good a seaboat it may be, scarcely vies with the Majestic in comfort; and Mr. Thurston is not quite so young as he was thirty years ago; but he is one of those irrepressibles. He went with the ostensible purpose of collecting land-shells or something (he's an authority on a score or more of curiously diverse subjects); but, lo and behold, the sampan returned to Honolulu with the news that he had discovered a new island and had taken possession of it in the name of the Island of Palmyra Copra Company, Ltd., and the United States of America.

### The Great Galleon

*On their left hand, as they broached-to, the wall of granite sloped down from the clouds toward an isolated peak of rock, some two hundred feet in height. Then a hundred yards of roaring breaker upon a sunken shelf, across which the race of the tide poured like a cataract; then, amid a column of salt smoke, the Shutter, like a huge black fang, rose waiting for its prey; and between the Shutter and the land, the great galleon loomed dimly through the storm.*

*He, too, had seen his danger, and tried to broach-to. But his clumsy mass refused to obey the helm; he struggled a moment, half hid in foam; fell away again, and rushed upon his doom. . .*

*Another minute. The galleon gave a sudden jar, and stopped. Then one long heave and bound, as if to free herself. And then her bows lighted clean upon the Shutter.*

*An awful silence fell on every English soul. They heard not the roaring of wind aud surge; they saw not the blinding flashes of the lightning; but they heard one long ear-piercing wail to every saint in heaven rise from five hundred human throats; they saw the mighty ship heel over from the wind, and sweep headlong down the cataract of the race, plunging her yards into the foam, and showing her whole black side even to her keel, till she rolled clean over, and vanished for ever and ever.*

*—From Westward Ho!, by Charles Kingsley.*

For many years Kingman's Reef has appeared on Pacific charts in latitude 6 degrees 23 minutes north and longitude 162 degrees 18 minutes west, but it has been described as being merely a shoal that dried on the edges at low water. The Palmyra company, however, having heard that the U. S. S. Eagle 40 last year sighted what appeared to be land, decided to dispatch its fishing and copra sampan to the reef with a view to exploring it and of taking formal possession should the report of Eagle 40 be verified. The result was that Mr. Thurston and his party, arriving at Kingman's May 9, discovered that there actually was dry land, although only 90 feet wide by 120 long and five or six feet in height above high tide; but, more important, that the reef enclosed a deep lagoon, the water of which was quite calm despite heavy surf breaking all about it on the coral ledges. The existence of dry land, I need scarcely point out, was necessary to the annexation of the lagoon and the acquisition of the facilities it offers fishing vessels.

I wonder whether Kingman's did exist for many years merely as a reef and within comparatively recent times wind and sea have scoured away the coral and cast it upon the rock to form the beginnings of an atoll; or whether indeed the islet has been there for centuries, its existence unsuspected even by the crews of wrecked vessels. I incline to the latter hypothesis, as many others doubtless will do, for the South Seas are not thoroughly charted even today.

When Mr. Thurston's discovery was reported, the Hydrographic Office, not knowing the explorer as well as I do, suggested that perhaps the land visited was Palmyra, Washington, Fanning or Christmas, all of which are atolls near Kingman's. Pending receipt of a fitting retort from Mr. Thurston, who was last heard of on Palmyra, I beg leave to whisper this word of advice in Washington's ear: Be careful. You cannot defeat The Original Annexationist. If you irritate him he is likely to go out and garner a literal sheaf of unknown islands. If he should, think of the work entailed in revising charts of the North Pacific Ocean.

* * *

S. K. KAMAIPELEKANE, wharfinger at Mahukona, Hawaii, has written a letter to the board of harbor commissioners in Honolulu. Mr. Kamaipelekane writes:

"Dear Sir:

"Respectfully yours, I calls you honorable body and make you a report to you for this matter as below.

"I sure, on next Tuesday coming at next, the S. S. Bee, she loading wood here for Honolulu, and this wood he storage on the wharf 3 weeks, equal 21 days, and I want you to send some man to see how many piles in all.

"For the reason can not see how many piles up here because, all mix. The owner he do not know how much piles when he shipping down.

"I wish you to see how many piles, and then we charge this Japanese on the storage on my wharf.

"Respectfully you,
"S. K. Kamaipelekane,
"Wharfinger."

THE SECOND MATE.

# HISTORY OF MARINE ENGINEERING—III

## Struggle Between Sail and Steam and Many Inventions Improving the Marine Steam Engine Marked Quarter Century Beginning with 1825

By R. J. ALEXANDER

IN closing the last installment of this series on marine engineering history, we had reached a period about 1825. At that time we found steam pressures around 5 or 6 pounds, the speed of the average steamboat around 8 knots an hour, the weight of machinery about 1800 pounds per i. h. p., and the fuel consumption about 7 pounds per horsepower hour. At that time also two steamers had crossed the Atlantic, and several coastal services had been regularly established both in America and in Europe.

Two interesting phases of development mark the evolution of steam navigation and marine engineering during the next twenty-five years, which period we shall attempt to cover in the present installment.

The first of these was the conflict between sail and steam, or rather between the prejudice in the minds of the marine fraternity of the world in favor of sail and the progressive tendencies of the marine engineers both in America and in Europe. The second interesting phase was the tremendous fertility of inventive genius leading to almost infinite variety in forms, types and adaptations of the marine steam engine.

### An Early Trans-Atlantic Voyage

The first startling or unusual event in steam navigation during this period occurred in 1828, when the Curacoa, built on the Clyde for Dutch interests, made the trans-Atlantic trip from Amsterdam to Curacoa in the Dutch West Indies. This vessel of 100 normal horsepower and 350 tons burden was run over this route several times with considerable commercial success. Another interesting voyage was that of the Hugh Lindsay in 1830. This vessel was of 411 tons burden and had two 80 horsepower engines. She made an experimental voyage from Bombay to Suez, coaling twice, first at Aden and then at Jiddah.

The steamship interests in Great Britain had been during the years from 1825 to 1835, endeavoring by all means in their power to convince Parliament of the wisdom of letting mail contracts to steamships only. In furthering their arguments they prepared elaborate tables showing the schedules possible with steamships in the then state of the art of marine engineering as compared with the actual schedules maintained on an average by the sailing packets. A portion of one of these tables is shown in an illustration. Finally these arguments prevailed, and the mail contract was given to steamers by the British postmaster general for semiweekly runs between Liverpool and the Isle of Man at £850 a year. This contract was made in 1833, and the following year another contract was signed with the General Steam Navigation Company for weekly conveyance of mails between London and Rotterdam and London and Hamburg at £17,000 a year. Each of these contracts was in force for more than twenty years.

### Iron Vessel Built in Sections

In the meantime many experiments had been carried on with naval architects in connection with steamers, and in 1820 there was built at the Horsley Iron Works an iron steamer in sections. She was sent to London and put together at dock there. Captain Charles Napier, afterward Rear-Admiral Sir Charles, who was a partner in the scheme, took charge of her and navigated her from London to Havre and thence to Paris without unloading any of her cargo. This is said to be not only the first iron-hulled steamer, but the first vessel that ever steamed direct from London to Paris. She was broken up in 1855 after thirty-five years' service.

Another trans-Atlantic trip was made in 1832 by the Royal William, a steamer 160 feet long with three masts, schooner rigged and caravel built, with only 28 feet beam between the paddle boxes. She had side lever engines built by Messrs. Bennett & Henderson, was constructed at Quebec and outfitted at Montreal. It is said that when she was steaming through the Gulf of St. Lawrence one of Her Majesty's frigates fired a shot across her bows and compelled her to lay to until the officers of the frigate could be convinced that there was nothing diabolical in her construction. The steamer sailed and steamed across without any trouble, and while in the Thames was sold to the Spanish government. Her name was changed to Isabella II and she became the first steam war-vessel of the Spanish navy. One or two steamers had been introduced into the British navy by the late summer of 1832, and we find a note that one of these, the Rhodamanthus, had crossed to Barbadoes from Plymouth. The Portsmouth Herald in announcing her intended departure expresses anxiety "to learn what may be the effect of the tropical climate on steam engines and fittings."

### An American Interested

In this year 1832 an American, Junius Smith, LL.D., graduate of Yale, who had been for some years in business in Great Britain, crossed the Atlantic to New York on the British ship St. Leonard with a passage of 54 days. On his return he made the passage in a packet ship, the Westminster, from New York to Plymouth in 32 days. Writing to his correspondents in New York of his experience on these two trips he says: "Thirty-two days from New York to Plymouth is no trifle. Any ordinary sea-going steamer would have run it with the weather we had in fifteen days with ease. I shall not relinquish the project unless I find it absolutely impracticable."

The project in Dr. Smith's mind was the formation of a company adequately financed to establish a permanent line of steamships with regular sailings between New York and Great Britain. He entered into this scheme with great enthusiasm, introducing it to the leading business men and bankers in London and by correspondence to merchant friends in America. By practically everyone he was considered a visionary, his project was received with indifference, and insurmountable obstacles were presented to its consummation. The doctor, however, was not to be discouraged. His first prospectus contemplated a company with £100,000 capital to build steamers of 1000 tons. This having been laughed out of court, he immediately came back with a prospectus proposing a company of £1,000,000 capital to build steamers of 1800 to 2000 tons. Both of his tentative plans presented well calculated schedules of operation and facts connected with the commerce and the shipping interests of the two countries showing the possibilities of revenue. The name of his company was to be The British and American Steam Navigation Company.

### A Steamer Constructed

After great labor Dr. Smith succeeded in securing a list of directors and then went before the public, opening books of subscription for stock in July, 1836. Shares were quite liberally subscribed, and within a short time sufficient capital was collected to warrant contracting for a first steamship. This steamship was to measure 200 feet long on the keel, 40 feet beam, with three decks, 1700 tons. She was to have two engines of 225 horsepower each, 76-inch cylinders and 9-foot stroke. Her cost was to be £60,000. She was finally completed as the British Queen with a larger hull, giving 2400 tons measurement. The first contractors on the engines went into bankruptcy, and the work had to be given over to Robert Napier of Glasgow, so that there was considerable delay in the finishing of the steamer.

The company, unwilling to lose the public interest that had been aroused by the sale of stock, chartered the steamer Sirius of about 700 tons for a voyage, and she was dispatched from London April 1, 1838, and arrived at New York on the 17th, making the passage in 16 days' consecutive steaming, although she encountered very tempestuous weather, thus completely demonstrating the truth of Dr. Smith's prospectus and the feasibility of establishing regular schedules across the Atlantic by steam. In July, 1839, the Sirius was succeeded by the British Queen, which arrived at New York after a passage of 14½ days.

### The Iron Duke Speaks

In order to show the kind of opposition that Dr. Junius Smith was up against in putting over this first regular trans-Atlantic steamship company, the real beginning of the present North Atlantic ferry system, it might be well to quote from a letter addressed to Dr. Smith by the Duke of Wellington, in which the duke says very tersely, "I would give no countenance to any scheme which had for its object a change in the established system of the country."

"BRITISH STEAM-PACKET SHIP FOR LONDON, TO SAIL FROM NEW YORK, MAY 1, 1838.

"The new and powerful Steamship

"'SIRIUS,'

"700 tons burthen and 320 Horse-power,

"Lieutenant R. Roberts, *Commander*,

is intended to sail from London, March 28th, touching at Cork, and thence, on the 2d of April, for this port, returning from New York to London on the 1st of May.

"This vessel has superior accommodation, and is fitted with separate cabins, for the accommodation of families, to whom every possible attention will be given.

"Cabin, $140, including provisions, wines, etc.

"Second cabin, $80, including provisions.

"This superior steamship has been chartered by the directors of the British and American Steam Navigation Company of London, to meet the pressing demands of the public, in anticipation of the steamship 'British Queen,' now building; is a new vessel, about six months old, and has proved herself superior to any steam-vessel in British waters in speed and seaworthy qualities.

"Further information afforded on application; and for freight and passage apply to

"Wadsworth & Smith,
"4 Jones Lane (rear 103 Front Street),
"*Agent of the American and British Steam Navigation Company.*"

Advertisement of an early trans-Atlantic liner

We reproduce from the New York Courier and Enquirer of April 23, 1838, a notice of the arrival of the Sirius at New York, together with an advertisement of the sailing of the Sirius on her return voyage. Note the fares in comparison with the present rates. The Sirius made a great stir on her first arrival, thousands assembling to see her as the news spread through the city. About 1 o'clock of the same day on which the Sirius arrived it was announced that the steamer Great Western was off the Hook, and with the arrival of two steamers from England on the same day it began to percolate into the minds of even the most conservative of American and British merchants that steam navigation across the Atlantic was no longer an experiment but a plain matter of fact, especially when it is considered that this season, the month of April, is one of the worst of the year in the North Atlantic.

### From Jest to Earnest

The Great Western was built at Bristol by the Great Western Steamship Company with the intention of commencing a regular line between Bristol and New York. At a meeting of the directors of the Great Western Railroad in October, 1835, one of these directors spoke of the enormous length, as it then appeared, of the proposed railroad from London to Bristol. Immediately Mr. Brunel, who was afterward to achieve such tremendous fame as a creator of steam vessels, jumped to his feet and exclaimed, "Why not make it longer and have it connect with a steamboat to New York and call it the Great Western?" The board at first thought this suggestion a great joke, but Brunel was never more in earnest and soon had engaged the serious attention of three of the leading directors. In the report to the board of an inquiry, which was taken up in regard to the state of shipbuilding for such an enterprise. Mr. Brunel laid down the prime principle upon which the success of ocean steam navigation wholly depended. This was that the resistance to the passage of vessels through the water increases at a "lower rate of progression than their tonnage. At equal speed one vessel twice the size of another will encounter four times the resistance, but its capacity in tonnage will be eight times that of the smaller vessel." By a well proportioned increase in size, therefore, it is possible to employ more powerful engines, carry enough coal for a long voyage, and at the same time have ample accommodation for passengers and goods.

It might be interesting to set down some of the details of these first two regularly operated trans-Atlantc steamers. The Sirius was of a powerful model with fine lines. Her measurement tonnage was 700. She was equipped with 320 nominal horsepower engines, and was schooner rigged. Notwithstanding rough weather, she made the voyage with ease and her passengers were delighted with her. She had an elaborate distilling apparatus for converting salt water into fresh for feeding her boilers, and one account in the New York papers states that the small copper tubes that formed the coils of her distillation equipment measured nearly four miles in length.

### Dimensions of the Great Western

The Great Western had a length between perpendiculars of 212 feet; an over-all of 235 feet; beam between paddle boxes of 34 feet 4 inches; and a molded depth of 23 feet 3 inches. Her measurement tonnage was 1320 tons, and she carried berths for 150 passengers, 26 crew, 40 engineers, firemen and officers. Her engines were built by Maudsley & Field, with a total horsepower of 400 in two engines; diameter of cylinder 73½ inches; length of stroke 7 feet. Her coal capacity was 600 tons. It was calculated that she would use with her equipment 30 tons a day. Her total cost was £50,000; £21,373-15/10 for shipbuilding; £13,500 for engines; £1000 for fitting up, furniture, painting grand saloon; and the remainder for rigging, equipment, stores and coals. The Great Western made 74 trans-Atlantic passages between the Severn and subsequently the Mersey and New York. On her second trip from New York she reached Bristol in 12½ days. She was later sold to the West India Company.

Reference is found in a work published at Bordeaux in 1842 to some interesting particulars of the engines of the steamers plying at that time on French rivers, especially the Gironde and the Garonne. One vessel, the Union, launched in June, 1829, is said to have had a compound engine constructed by Hallette of Arras. This engine had two inclined cylinders with connecting rods taking hold of the same crank pin. The cylinders had a stroke of 26 inches and diameters of 15 inches and 15.8 inches, respectively. It was said to have been run at 30 r. p. m. under a pressure of 66 pounds of steam.

Another French steamer, built in 1837 at Bordeaux, had three oscillating cylinders, two of 10.78 inches diameter each with 39.4 inches stroke, and the third having a diameter of 21.27 inches with a stroke of 32 inches, the connecting rods from these cylinders taking hold of three different cranks. The two small cylinders took steam directly from the boiler at 74 pounds pressure and discharged the same into an intermediate receiver, from which it passed to the large cylinder and then to the condenser.

### Beginnings of Cunard Line

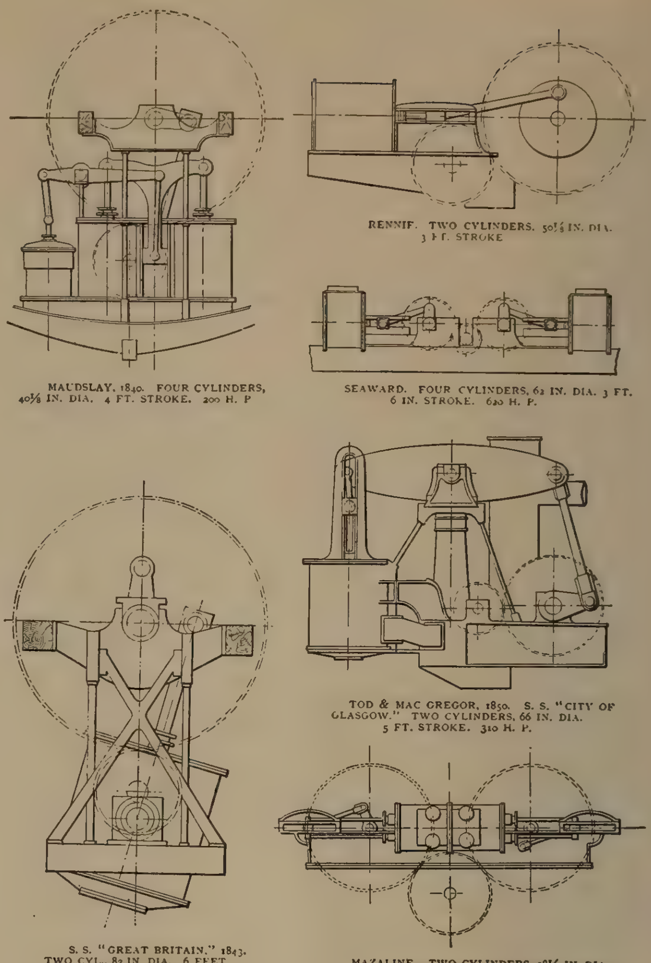
In 1840 Samuel Cunard, who had for many years conducted a line of packet brigs between Halifax and England, started what afterwards came to be the Cunard Line of steamships. It is rather a singular coincidence that Cunard, who had run his sailing ships in such fashion that they were almost universally known as sea coffins, should in his steamship line have started a policy of conservative safe operation, which has made the Cunard name almost a synonym for sea safety. On a small subsidy from the British government Cunard in 1840 started the keels of four steamers of 800 tons each to run between Halifax and England. A large meeting in Boston adopted by acclamation resolutions favoring the extension of this line to Boston from Halifax. Cunard waited on the Admiralty with these, and on the strength of the resolutions and his agreement to extend the line got an additional £10,000 a year, enlarged his building scheme at Glasgow and built four steamers, the Britannia, the Acadia, the Caledonia and the Columbia. The Britannia left Liverpool July 4, 1840, and arrived at Boston July 18, 1840, 14 days and 8 hours.

All of these steamers that we have been describing are to be considered as paddle-wheel, the great majority of them with side-lever beam engines; with a speed hardly in excess of 11 knots under the engines and working on low pressure with very long stroke and large diameter cylinders and with jet condensers.

### Screw Propeller Appears

About 1840 the screw propeller began to get into the game. So far as the theoretical application of the screw propeller is concerned, it had been recommended by many marine engineers, as we have seen in the first installment of this series, even prior to the year 1800. The difficulty was that with the low-pressure, large diameter, slow-speed engines it was impractical to turn the propeller at a high enough rate of revolution to get any efficiency, but along about 1840 some marine engineer got the idea of gearing the engine up to the proper propeller speed, and in 1842 there had been built in Great Britain five screw steamers, ranging in tonnage from 30 to 300 and in nominal horsepower from 10 to 70. There were building in that same year the Great Britain of 3600 tons with 1000 horsepower and the Rattler of 800 tons with 2000 horsepower.

In 1843 Captain John Ericsson, who had moved to New York, built the first screw steam war-vessel, the Princeton, for the United States Navy. A great deal of ingenuity was displayed in the design of the engines, propellers and hull of this vessel. She was 164 feet long with an extreme beam of 30 feet 6 inches and a measurement tonnage of 673, with a displacement at 18 feet draft of 1046 tons. All of her machinery was placed entirely below the water line. She had a very flat floor amidships, with great sharpness forward and aft and a remarkably fine run. She was the first war steamer to burn anthracite coal, thus avoiding black smoke. She had telescopic funnels, which could be lowered out of the way of sails, and used blowers for forced draft. For the first time also in this ship the engines were coupled directly to the propeller shaft.



MAUDSLAY, 1840. FOUR CYLINDERS, 40⅛ IN. DIA. 4 FT. STROKE. 200 H. P

RENNIE. TWO CYLINDERS. 50⅛ IN. DIA. 3 FT. STROKE

SEAWARD. FOUR CYLINDERS, 62 IN. DIA. 3 FT. 6 IN. STROKE. 620 H. P.

TOD & MAC GREGOR, 1850. S. S. "CITY OF GLASGOW." TWO CYLINDERS, 66 IN. DIA. 5 FT. STROKE. 310 H. P.

S. S. "GREAT BRITAIN," 1843. TWO CYL., 82 IN. DIA. 6 FEET STROKE. 500 H. P.

MAZALINE. TWO CYLINDERS, 38⅛ IN. DIA. 3 FEET STROKE. 120 H.P.

Some of the engines used in early steam vessels

### Paddle-wheel versus Screw

It happened that on the day of her trial the Great Western, which was then considered the fastest paddle-wheel steamer, was running down New York harbor on one of her regular trips. Great volumes of dense black smoke were pouring from her funnel. Her paddle-wheels left a snow-white wake behind her. The Princeton on her trials came down the Hudson at great speed, no smokestack visible, it having been lowered level with the rail; no smoke to be seen. So propelled by a noiseless and unseen agency she reached and passed the Great Western and ran two circles around that ship before the Great Western got outside the outer harbor.

Unfortunately, the hull of the Princeton had been built of white oak, and by 1849 she had to be broken up. The engines were kept at the Boston Navy Yard until the summer of 1851, when another hull was built and Ericsson's engines with new boilers hitched up to a propeller enlarged for this hull. The arrangement, however, was apparently makeshift, for the performance was unsatisfactory and this new Princeton saw very little service at sea.

Between the years 1845 and 1850 many new trans-Atlantic lines came into being, among them the Bremen Line, which was the first American company, and ran two steamers regularly between New York and Bremen. The hulls of these two ships, the Washington and the Herman, were built by Westervelt & McKay and the machinery by Stillman, Allen & Company, New York. The ships were of 1700 and 1800 measurement tonnage, respectively. Each had two side-lever engines with 6-foot diameter cylinders and 10-foot stroke and made an average speed at sea of 11 knots.

### Collins Line Founded

The Collins Line, established in 1847 by Edward K. Collins and others, secured from the government of the United States the first mail subsidy, contracting to make twenty-six voyages in each year and to employ five first-class vessels between New York and Liverpool. For this mail service the company was to receive $33,000 a voyage. There was also a building subsidy amounting in total to $385,000. The Collins Company agreed in consideration of these payments to make the fastest passages between England and America. Statements submitted to Congress at the time showed that it cost nearly half a million dollars annually to effect the saving of a single day on the passage to Liverpool.

The Arctic, the Pacific, the Atlantic, the Adriatic and the Baltic were built under this agreement, the Atlantic being the largest of the fleet with an over-all length of 345 feet, a beam of 50 feet and a registered tonnage of 4144.75. The Arctic was the fastest of the lot, having fine lines moulded by George Steers, the designer who brought out the yacht America. The Arctic's tonnage was 2856, length of deck 282 feet, cylinders 95 inches in diameter with 10-foot stroke. Her paddle-wheels were 35 feet 6 inches in diameter, containing 36 floats each. She burned about 87 tons of coal a day. On her eighth passage from New York to Liverpool she made the then extraordinary time of 9 days 17 hours 12 minutes. The Arctic was run into by a French steamship in midocean September 27, 1854, and sunk. The Pacific with 240 souls on board, including the wife of Mr. Collins, sailed from Liverpool and was never heard of.

### Repair Costs Excessive

The average time of 42 westward trips in the early days of this line was 11 days 10 hours 26 minutes. Although the Collins Line steamers were as substantially and economically built as any vessels of their time, after running six years their cost for repairs was more than the previous cost of the ships, maintenance showing up on the books at 18 per cent a year. This was largely due to the insane craze for speed. As one congressman, speaking in the House of Representatives, expressed it: "We have the fastest horses, prettiest women, the best shooting guns in the world, and we have also got to have the fastest steamers. The Collins Line must beat the British steamers. Our people expect this of Mr. Collins, and he must not disappoint them." As would be expected under such operation, the line soon failed, and the fine steamers were disposed of in various ways. Some of them were altered to sailing ships, others sold to British owners.

In 1848 and 1849 the attention of American marine engineers and naval architects was focused toward California, and from that time on to 1914 the development of trans-Atlantic traffic and the bulk of the marine engineering work in connection therewith was left mainly in the hands of the British.

In 1848 the steamer California of 1086 tons measurement left New York October 6 bound for California by way of the Horn, thus marking the appearance of the Pacific Mail Steamship Company, which was to play such a large part in the development of Pacific Ocean steam navigation. She was soon followed by a number of others whose principal dimensions are given in the accompanying table. These steamers, after making the long trip around the Horn or through the Straits of Magellan, found nothing ready to receive them on the Pacific Coast. Drydocks had to be built and workshops established at Panama, San Francisco and Astoria. This work was accomplished with great dispatch, and by the middle of 1850 a regular schedule was maintained between San Francisco and Panama in connection with a similar line of steamers on the Atlantic side between Aspinwall and New York.

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## A REMARKABLE DOCUMENT

WHEN the Vancouver Merchants' Exchange held its first annual dinner at the Hotel Vancouver the menu, denominated "bill of lading," contained some remarkable conditions, which will enable steamship operators to have a good laugh at their own expense. The conditions follow:

### CONDITIONS

"1. Hotel not responsible for damage sustained by digestive organs of guests through inefficient and/or insufficient mastication of food or victuals, or of excessive or inexpert imbibal of any beverage, drink, fluid, refresher, pick-me-up, cocktail and/or any other liquid or semi-liquid whatsoever whether such damage be caused by or through the negligence of the Hotel or its servants, or the inadequacy and/or inefficiency of the service, plates, knives, forks, spoons, glasses and/or other eating appliances the property of the Hotel or the guests, including also false teeth and/or other adventitious aids to digestion not under control of the Hotel.

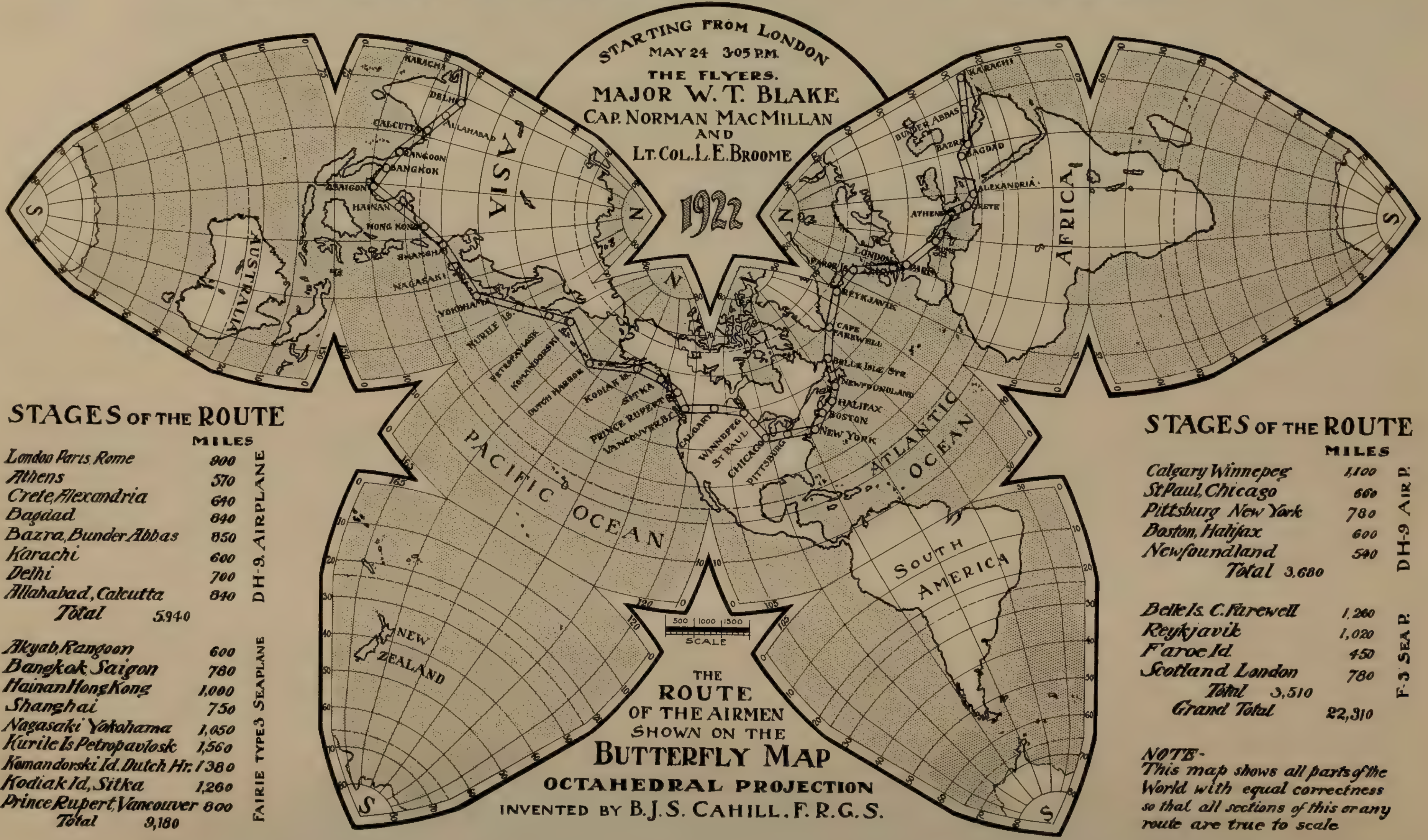
"2. Hotel not responsible for quality of cigars, cigarettes, tobacco or other weeds unless supplied by the hotel or its agents, nor for loss or damage caused by nausea induced by the use of such cigars, cigarettes, or tobacco. All dinners to be paid for, lost or not lost. General average as accustomed, payable according to International Hotelkeepers' Rules, 1890.

"3. Not responsible for errors of description of food mentioned in this bill of lading. Quality and origin unknown (and in several instances extremely doubtful).

"4. While the Hotel warrants all dishes, viands and liquid refreshments to be sound and of full measure when despatched from the kitchen no responsibility is attached to the Hotel for leakage, ullage, short weight, breakage, nor for wrongful description on the bill of fare, nor for theft, barratry, evaporation, absorption or other loss of contents of any bottle and/or container of liquid refreshment, (whether conveyed in hip-pockets or otherwise), nor for the presence of young chickens in eggs, or any similar latent defects in or about any foodstuff, beverage, sweetmeat, viand, aliment, or similar refreshment served by the Hotel to the guests.

"5. If, in any of the clauses preceding, any liability which might be incurred by the Hotel has been overlooked, it is hereby expressly stipulated, in the manner customary in Bills of Lading, that the Hotel is **NOT RESPONSIBLE FOR ANYTHING.**"

# The CIRCUMAVIATION of the GLOBE



STARTING FROM LONDON
MAY 24 3.05 P.M.
THE FLYERS.
MAJOR W. T. BLAKE
CAP. NORMAN MACMILLAN
AND
LT. COL. L. E. BROOME

1922

THE
ROUTE
OF THE AIRMEN
SHOWN ON THE
BUTTERFLY MAP
OCTAHEDRAL PROJECTION
INVENTED BY B. J. S. CAHILL, F. R. G. S.

## STAGES OF THE ROUTE

| | MILES | |
|---|---|---|
| London Paris, Rome | 900 | DH-9. AIRPLANE |
| Athens | 570 | |
| Crete, Alexandria | 640 | |
| Bagdad | 840 | |
| Bazra, Bunder Abbas | 850 | |
| Karachi | 600 | |
| Delhi | 700 | |
| Allahabad, Calcutta | 840 | |
| Total | 5,940 | |
| Akyab, Rangoon | 600 | FAIRIE TYPE 3 SEAPLANE |
| Bangkok, Saigon | 780 | |
| Hainan Hong Kong | 1,000 | |
| Shanghai | 750 | |
| Nagasaki Yokohama | 1,050 | |
| Kurile Is Petropavlosk | 1,560 | |
| Komandorski Id. Dutch Hr. | 1380 | |
| Kodiak Id, Sitka | 1,260 | |
| Prince Rupert, Vancouver | 800 | |
| Total | 9,180 | |

## STAGES OF THE ROUTE

| | MILES | |
|---|---|---|
| Calgary Winnepeg | 1,100 | DH-9 AIR P. |
| St Paul, Chicago | 660 | |
| Pittsburg New York | 780 | |
| Boston, Halifax | 600 | |
| Newfoundland | 540 | |
| Total | 3,680 | |
| Belle Is. C. Farewell | 1,260 | F-3 SEA P. |
| Reykjavik | 1,020 | |
| Faroe Id. | 450 | |
| Scotland London | 780 | |
| Total | 3,510 | |
| Grand Total | 22,310 | |

*NOTE-*
*This map shows all parts of the World with equal correctness so that all sections of this or any route are true to scale*

# MARINE INSURANCE

**CHARLES F. HOWELL, Eastern Contributing Editor**
**"FRANCIS ADRION," Western Contributing Editor**

## On the Atlantic

### Underwriters Favor Bill

Among marine insurance men there is a strong sentiment favoring the immediate passage of the Merchant Marine Act now pending before Congress. This feeling may be traced to two outstanding causes: first, a firm belief that the best interests of the country demand an American merchant marine in order that our foreign commerce may have the same opportunity for growth and expansion as that of other countries; and second, a realization that insurance follows the flag and that without an American merchant marine the marine insurance market in this country must dwindle to its pre-war insignificance. An increased use of American ships certainly would follow upon the enactment of this proposed legislation, and more use of our ships means more business for the underwriter. To these considerations may be added the conviction current among marine insurers that a higher degree of efficiency in ship operation is bound to attend the employment of vessels in private hands. This latter viewpoint will interest the layman, because of its direct tendency toward lower insurance rates.

All who are familiar with the history of marine insurance development in this country know that the fortunes of this branch of foreign trade have risen and fallen with the development or decline of our merchant marine. As we all know, the general impression is that sentiment and patriotism play but a small part in business; that merchants always buy in the lowest markets and sell in the highest irrespective of the flag. Although this may, to a large extent, be true, yet neither sentiment nor patriotism is lost to view when the merchant is aroused to the influence on the commercial supremacy of his country of some needed agency of trade. Thus today our merchants are being importuned to ship under the American flag, and we see Congress and the entire country awake to the necessity of making our merchant marine a recognized force among the carriers of the world.

In other words, we Americans are being made ship-minded. With the passage of the ship subsidy bill a merchant marine is practically assured to this country, and our people will come to regard the shipping industry as an important part of our economic life. This is another way of saying that those other agencies of overseas commerce which go hand in hand with the carrying trades will receive the thought and publicity needed to prevent stagnation. In the days before the world war our shipping was of little importance, and the public scarcely knew of the existence of such a business as marine insurance. What was the consequence? Foreign underwriters completely dominated the American insurance market. And yet when our country awoke to the need of a merchant marine the prominent part played by marine insurance in the matter was immediately recognized, and we heard Mr. Hurley inveighing against the marine underwriting interests of the country in a manner not entirely pleasant and yet of a nature to attract the attention of business in general to the importance of this department of our commercial establishment, and to demonstrate that it ranked side by side with a merchant marine in the struggle for American commercial independence. Out of this grew the congressional investigation of the capacity and needs of our marine insurance market, and eventually the establishment of the American Marine Insurance Syndicates, which gave a firm foundation upon which to build a strong hull market.

Much in the same way the investigation of insurance rates on Shipping Board vessels impressed the public with the importance of marine insurance in the establishment of a merchant marine. The discussion doubtless will result in facilitating the passage by the several states of laws needed for the placing of marine insurance in this country upon a footing of equality with that of other nations. Today the representatives of marine insurance companies are continually being invited to Washington to confer and advise on measures and matters affecting our national foreign trade interests, a thing unheard of before the war.

The point is this: Should the pending Merchant Marine Act go down to defeat and our vessels be driven from the seas, then our marine insurance interests must contract and dwindle into utter insignificance. American business men today are patronizing the underwriters of their own country largely because of the patriotic sentiment that the American flag must remain on the seas; to which is coupled, by way of encouragement, the attitude of the government in its expressed desire to do all it can to make the way easy for American marine insurance.

It is also felt that the bill will prove of great advantage in that it will foster the American Bureau of Shipping, as no participation in the subsidy can be enjoyed by a ship owner unless his vessels are classed by the bureau. And the relations between that classification society and marine underwriters are too close and vital to require explanation here. Thus, from both patriotic and selfish motives, marine insurance men are ardently advocating the passage of the Merchant Marine Act of 1922.

### Uniform Cargo Policy

After a year of difficult and arduous work the special committee appointed by the American Institute of Marine Underwriters has completed its task and reported a simplified cargo policy that is so admirable from every point of view that the institute has unanimously approved it and the printers are now distributing the first copies. It represents the best constructive thought the institute could muster, and also includes many of the suggestions that developed when the brokers were invited to give it their closest criticism. The form it now has will doubtless be permanent, as unanimous endorsement is confidently expected from the Bankers' Commercial Credit Conference, to which it has been submitted.

This policy represents the nearest approach that has ever been made in marine insurance in this country to a standard uniform contract, and as it has received the endorsement of the institute, to which practically all the important American companies belong, it is now available for any shipper's use. I might add that although the various companies doubtless will prefer to make use of their old individual policies, as in the past, they will cheerfully issue this new one whenever it is requested.

FIREMAN'S FUND
Insures Hulls, Cargoes,
HEAD OFFICE: CALIFORNIA AND SANSOME

JOSEPH HADLEY, European Agent
3 LOTHBURY, E. C.
LONDON

E. A. VALENTINE, Resident Agent for Oregon
714-715 BOARD OF TRADE BUILDING
PORTLAND, ORE.

FRANK G. TAYLOR, MANAGER, PACIFIC NORTHWEST BRANCH

The achievement of this policy is a distinct step forward in the direction of uniformity. Not the least of its advantages is the basis it provides for further improvement and development in the future. In this connection it should be borne in mind that marine insurance is fundamentally different from any other department of underwriting and does not admit of anything like the exactness and uniformity characteristic of fire, life, casualty and other lines of insurance. With these latter all the cards are on the table, so to speak. The number and nature of the hazards to be encountered are definitely known and may be accurately weighed in advance; but in marine underwriting the conditions vary with almost every case. The judgment of the individual underwriter enters with unusual force in every calculation, and these judgments necessarily differ widely. One office may have enjoyed years of profit from insuring a certain line of risks, while the underwriter across the street will have had steady losses from the same class of business. This naturally leads to much confusion and perplexity on the part of the insured, who cannot always understand why he receives such divergent treatment as he passes from one of his insurers to another. It has been the purpose of this attempt at drafting a simplified and fairly uniform cargo policy to assemble the fundamental clauses and conditions that prevail in practically all offices and so secure to the insured a certain community of action. The theories and fundamentals of marine insurance are universal, but practically every individual underwriter has practices and judgments of his own that are based upon his personal experience.

## New Peruvian Conditions

It is well for shippers to Peru to understand the changes surrounding exportations to that country that have developed out of the application of the new Peruvian customs laws. These duties are no longer levied as in the past. Ships are discharged in the open roads in the large harbors of that country, and goods are conveyed to the custom houses in lighters, where the merchandise is cleared by the officers, cases and packages are opened and their contents examined without the consignee or his agent being present. The customs are then paid and the goods declared free. But not until then has the claim agent a chance of determining damage, and that is frequently a matter of days after the merchandise has reached the custom house. This has naturally raised a question as to whether or not goods can now be safely insured from warehouse to warehouse, particularly in view of the serious theft and pilferage inland hazard. The suggestion is frequently made that it might be advisable for insurers to obtain for Peruvian ports some such contract as the River Plate Clause, by which the risk shall cease at least fourteen days after the arrival of the goods at the custom house or port. Now that the survey may not be made in the custom house it is obvious that considerable damage may easily be passed along to the underwriter by those consignees who are reluctant to take delivery in the face of altered market conditions and declining prices.

## Limitation of Liability

A shipper's acceptance of a truckman's receipt in which a certain valuation has been set down does not sacrifice the former's right to recovery under his insurance policy, nor does it prejudice the underwriter's right of subrogation nor violate an express warranty of the policy, according to a recent decision of the New York Supreme Court, Appellate Term, First Department (193 New York Supplement 688). In the case in question action was brought by the Bolton Worsted Mills Company, Inc., against the United British Insurance Company, when the latter refused to pay a claim for the loss in transportation of eight pieces of goods sent by the former's agent at Philadelphia to the Bolton people at New York.

The truckman who received the merchandise at Philadelphia from the shipper gave a receipt therefor in writing upon a form filled in and prepared for his signature by the shipper's clerk. The parts of the receipt filled in at the time of the shipment consisted of the date, name of the shipper and consignee, with the latter's address, number of packages of goods, and the words "val. $200." Nothing was said at the time as to the value of the goods, nor as to conditions or terms of shipment, except that the truckman said he would cart the merchandise for a certain figure, which was based upon the size of the package and not upon its value. The goods were stolen before the New York consignees received them. The question was, did the words "val. $200" limit the truckman's liability? In the opinion of the court they did not, the finding being that the policy provides for the loss on the basis of actual invoice costs, plus certain other charges.

## Dangers from the Rail Strike

Shippers and brokers should carefully consider the rail strike and watch the underwriting conditions. A stoppage of transit, if caused by a strike, may leave the assured unprotected in the event of his policy containing a clause excluding the risks of strikes. The possibility of direct damage as the result of strikes may be slight, but the danger of conflagration due to congestion is decidedly of more importance.

INSURANCE COMPANY
Freights and Disbursements
STREETS, SAN FRANCISCO, CALIFORNIA

W. H. WOODRUFF, Manager, Southern California Marine Branch
230 BYRNE BUILDING
LOS ANGELES

CHARLES R. PAGE, Manager
ATLANTIC MARINE DEPARTMENT
72 BEAVER STREET NEW YORK

309 COLMAN BUILDING, SEATTLE, WASHINGTON

## Basis of Valuation

It is frequently asked: "What is the basis of valuation for adjustment of loss in case insurance on cargo has been made without fixing the valuation?" In such cases the law provides that the value of the property at the time of shipment, plus the insurance premium, shall be the valuation for adjustment purposes. The type of policy involved is of the first importance. In actual practice it is exceedingly rare for an insurance to be made without some basis of valuation.

## Sue and Labor Clause

There can be no question but that the so-called Sue and Labor Clause in a marine insurance policy renders the underwriter liable under certain circumstances for a loss in excess of the face value of the contract. But before accepting this as a general rule it is well to bear in mind that certain expenditures, such, for example, as salvage and general average charges, do not ordinarily come within the scope of sue and labor expense. It is also well to read the policy through carefully before assuming that you are covered under the Sue and Labor Clause for expended sums that, when added to the loss, aggregate an amount in excess of the insured value of the subject matter. Many policies contain clauses that limit the recovery from any and all causes to the face value of the policy.

## More S. B. Vessels Re-rated

Charles R. Page, chairman of the underwriters' committee appointed to co-operate with the Shipping Board officials in an effort to secure for the latter's vessels a nearer parity of rating for cargo purposes with that regularly accorded their foreign competitors of like class, has announced that the committee has recommended to the interested underwriters that they extend to the Shipping Board vessels operated by the Mallory Transport Lines, A. H. Bull & Company, and the Export Steamship Corporation the highest classification given to any foreign or privately-owned American ships in the Mediterranean and Near East trades. The steamships operated by Moore & McCormack from North Atlantic ports to Irish ports also have been recommended for equivalent classification with any cargo ships operating in the same trade. Our readers will remember that previously the Shipping Board passenger vessels operated by the Munson, United States, Pacific Mail and Admiral lines were recommended for the most favorable classifications in their respective trades. Additional reports of re-ratings will be forthcoming from the committee as rapidly as the work of investigation can be carried along. It is said that the underwriters have found a steady improvement in the operating efficiency of board vessels during the past year; that the operating personnel is of better quality, and that the operating conditions are improving as familiarity with the respective trade routes increases, and that the ships themselves have been substantially bettered as a result of careful supervision and repairs.

## Changes in Eastern Offices

The marine department of the Pennsylvania Fire has appointed as its underwriters for the Pacific Coast the firm of Balfour, Guthrie & Company of San Francisco. The Pennsylvania is the only one of the North British group that will be entered on the Pacific Coast at the present time.

After forty years in marine insurance W. A. Hamilton, an underwriter with Chubb & Son, has retired. He sailed for Europe a few days ago for an extended pleasure trip as a beginning of his life-long vacation. Upon his return he will make his permanent home at Hamilton, Ontario, where he was born.

William H. McGee has returned from a six weeks' business trip to London and Paris.

Fred J. Conklin has been made manager of the departments of ocean cargo, Great Lakes hull and cargo and yachts, in the new firm of Osborn, Slosson & Smyth. He had been with Appleton & Cox for eighteen years, prior to becoming manager and chief underwriter of the Overseas Underwriting Agency, which represented the National of Hartford and other prominent companies in marine insurance.

Arthur Hoyt has resigned as vice-president of Frank B. Hall & Company to re-engage in the steamship business.

John Ferguson, marine manager of the American Foreign Insurance Association, has gone to Europe for an extended trip in the interests of that organization.

The New Zealand has appointed Albert Ullmann, who is the marine manager of the North British group, a marine general agent operating from New York.

F. P. Baldwin has been assigned to the Panama Canal ports as an exclusive surveyor for the American Bureau of Shipping. He was formerly located at Valparaiso, Chile, as a bureau representative.

S. D. McComb, manager of the Marine Office of America, has been studying West Coast conditions during a six weeks' trip to the Pacific, where he visited Los Angeles, San Francisco, Portland, Seattle, Vancouver, Winnipeg and Toronto.

Samuel Bird, president of Talbot, Bird & Company, has returned from his six weeks' pleasure trip to Europe. C. F. H.

# News of the Pacific

## The Merchant Marine Act

The marine underwriter, aside from his interest as a citizen in the proposed aid to merchant shipping, is concerned with this form of legislation as having a direct bearing on his own business.

The government's inability to dispose of its war tonnage, consisting of some 1500 vessels, left the Shipping Board with a man-sized problem on its hands. Had the Shipping Board found a ready market for this fleet, as indeed it might had conditions been at all favorable, one may rest assured there would be no subsidy bill now before Congress, but with the board facing a yearly deficit of approximately $50,000,000 Chairman Lasker found it necessary to offer something more attractive than any price of so much a deadweight ton.

So perhaps it is well for all concerned. The ingredients of this sugar coating are very wholesome and are calculated to coax the most pill-shy American capital into the open air and upon the wide blue sea. And well it might. I shudder to think of an organization of shipowners attempting to secure some such legislation on their own. Their chances would compare favorably with those of a bottomless skiff in a very choppy sea. Not, however, because they did not need this aid or were not entitled to it, but because their misery lacked the company to make the feeling unanimous. This has now been accomplished since Uncle Sam became a shipowner himself. He has been subject to all the handicaps the American shipowner is called upon to face, and has found the going very poor indeed.

## The Underwriter

In so far as this bill affects shipping, to just such an extent does it concern the underwriter in the United States; for, in one sense, a large American-owned merchant marine justifies the existence of the American marine underwriter, and likewise as this fleet grows so shall the business of marine insurance in the United States enlarge, until one day a foreign market will have nothing to offer that cannot be had at home. Every day we find business slipping from our hands to competitors because on their greater writings, they can figure closer on the proposition than we can.

## Hull Underwriting Problems

Consider for a moment the hull underwriter. The margin of profit secured from this class of risk is very small even in the most favorable circumstances. Is it not essential, therefore, that owners shall not skimp on ordinary repair work and upkeep? It is a well known fact that this is one of the most important elements affecting a hull risk. The American owner is a good owner if he is making money; but when an owner is finding it impossible to operate profitably, the ship will reflect this condition and in the long run it is the underwriter who pays for it.

It is altogether too true that the hull underwriter must look well into the future to find much cause for gratification. The prospect of insuring this emergency built fleet even in its entirety causes no great joy; when, however, this great fleet (great at least in number) shall have been replaced by vessels of greater worth, then, and not until then, will the underwriter's hull account come into its own.

Our great handicap at the present time as regards our hull account is our lack of a substantial nucleus. Imagine, if you can, these 1500 vessels replaced by tonnage built by private enterprise and all possessing the individual merit desired. Add all this to our present tonnage and you may well perceive the possibility of overcoming, to a certain extent at least, this handicap.

Small wonder that the London market, fully possessed of this working quota, is able to make the necessary concessions, either by way of rate or conditions, to entice the cream of our hull business across the pond, thus leaving to us skimmed milk in what we wholly retain, and accepting London's rates and conditions when participating in something that even London (by the grace of Allah!) could not swallow whole.

I am purposely ignoring here other vital factors that put the American market at a decided disadvantage, such as the lack of worldwide operations. Likewise, I do not look to our syndicates to realize the fulfillment of my dream. But I do contend that if a large American merchant marine becomes a reality, in time there will be a sufficient market here to underwrite it.

The foregoing remarks are necessarily of rather an idealistic nature in the face of present economic conditions. However, the underwriter has at the moment so many reasons for a pessimistic feeling, that it is worth an effort to look ahead far enough to visualize this picture.

## Cargo Insurance Prospects

That the income of American cargo underwriters will greatly increase is obvious. With a great fleet of American ships carrying goods from foreign ports to American buyers, it is only natural that a large amount of insurance now placed abroad will be diverted into the American market. This is particularly true if that portion of the bill allowing a deduction of 5 per cent for moneys paid for freight in calculating amounts due as income tax survives. The reason for this is simple. To secure the benefit of this deduction, the freight money must be paid to American ships, and applies whether inbound or outbound.

Naturally the American buyer who at present buys his merchandise c. i. f. will change his mode of purchasing so as to avail himself of this exemption. Assuming that he will buy his cargo f. o. b. foreign dock it leaves him to arrange his own freight and insurance. There will, of course, be exceptions, but for the most part this insurance will be placed at home, whereas under the present arrangement it is almost invariably otherwise. This will also encourage our exporters to quote c. i. f. prices, which also spells American insurance as well as American bottoms. Added to this will be the prospect of virgin business, the result of American enterprise.

## Iowan-Welsh Prince Crash

An official investigation conducted by Inspectors Edwards and Wynn following the sinking of the Welsh Prince on May 28 has resulted in a three years' suspension of the license of Captain A. R. Pearson, pilot aboard the Iowan. Charges against Captain Edward Sullivan, pilot aboard the Welsh Prince, were held not sustained.

The Welsh Prince, bound from Portland for Oriental ports, and the Iowan, on the way from Puget Sound to Portland, collided off Altoona on the lower Columbia River at 10:45 p. m. In addition to seven men killed, three men aboard the Welsh Prince were injured.

Testimony on behalf of Pilot Pearson was to the effect that he had sounded one whistle on getting within signaling distance of the Welsh Prince and that later, when the vessels were within three or four ships' lengths of each other, he repeated the signal, which was replied to by the Welsh Prince with a danger signal and two whistles. These were replied to by the Iowan with a danger signal. It was shown that both steamers' engines had been ordered full speed astern when they collided. Pilot Sullivan and officers and members of the crew of the Welsh Prince on duty at the time testified the Iowan had given two whistles at first, which were responded to by the Welsh Prince with two blasts and that on the vessels nearing each other the Iowan gave one whistle.

Captain John J. Anderson, a brother pilot, who was aboard the steamer Sinaloa some distance astern of the Iowan, told of hearing two whistles given and of their being answered the same way. His testimony was corroborated by an affidavit filed by the mate of the Sinaloa.

## Can We Stop This Leak?

Has it ever occurred to you how much hard-earned premium fails to reach your company from open policy customers? Each day furnishes its quota of evidence as to the fallacy of our open policy system, in so far as premiums are concerned. I do not refer to any premiums you have on your books. Rather, I have in mind the not inconsiderable amount of premiums that should appear there, but which do not because your good client John Smith has failed to declare all his shipments. Please notice the insertion of the word all. Most certainly he declares shipments more or less regularly. It is also true that he pays his bills promptly and tells you that he is making you rich. Were you to ask him if he had declared all his shipments he would swear, first with you that he had and then at you for presuming to doubt it.

But has he? Most decidedly not. Because, when you handed Mr. Smith that gilt-edged contract to tuck away in his safe, you amputated, there and then, his incentive to declare, which is the mother of premium. I do not intend for a moment to suggest that Mr. Smith has intentionally withheld declarations from you. Nor do I think him insincere in his avowal of fullness in declaring. But I do assert, and I think you must agree, that his active interest in insuring, so keenly manifested when negotiating for the open policy, ends when it is secured.

Please consider this situation for a moment, because it is sad indeed. Mr. Smith has satisfied himself as to the soundness of the security offered. He has agreed with you as to rates, which are doubtless low enough. The conditions of your policy are broad enough to cover his requirements fully. You have, when enumerating the advantages of an open policy, assured Mr. Smith that he is fully covered at all times irrespective of declarations.

Voila! Mr. Smith has accomplished his purpose. He has protection in case of loss. He now instructs George, one of his assistants, to declare all future shipments to the Umpty-ump Insurance Company and dismisses the matter from his mind.

Now let us assume that George is a conscientious, hard worker. He has received instructions as to the proper basis on which to declare and willingly adds this task to his other many duties. It is, of course, obvious that on a shipment requiring the negotiating of documents, the underwriter will receive a token in the form of a declaration from George. Shipments of this nature speak for themselves and have therefore no part in my tale. (I may as well admit here and now that our intercoastal business is the worst offender and, having relieved myself of this secret(?) shall proceed.)

George has now been declaring shipments to you for some time. He is most careful to declare all shipments, for he does not yet realize fully the splendor of your policy. But wait. The good steamer Blank is due to sail from San Francisco today. George is resting easily in the belief that all is as it should be. Ten days later he is informed by Messrs. Black & Company that the vessel lost her bottom or had some other minor difficulty in consequence of which she had to, etc., etc. A general average has been declared and he is asked to sign a bond covering ten shipments, and to secure, in lieu of a cash deposit, a guaranty from his underwriters. About this time George is seized with a suspicion that all is not right.

Five minutes later he dashes madly into your office and moistily explains his trouble. By some hook or crook instead of declaring ten shipments he declared only eight and now the ship has sunk or dropped her propeller or something and George is in a terrible sweat. Right here is where you slip once more. Do you throw a good scare into George and tell him you do not see what you can do about it but that you may be able to protect him in this case, etc.? You do not. You smilingly assure George that everything is right with the world and that if he will simply declare the missing links you will fix him up. "Why, of course," you tell him, "that is why you have an open policy," and some more bunk of the same sort.

Having sent George forth with a relieved smile you experience a feeling of gratification over the incident. "What further evidence of our fair dealing could John Smith's company want?" you ask yourself. Indeed, there is nothing to be added. The situation is perfection itself from your customer's point of view. But your feeling of gratification is unwarranted. What you should do is to shed a few bitter tears over the fact that henceforth George will be thoroughly imbued with an easy care-free spirit in this matter of delaring shipments.

If the foregoing holds good on shipments actually made by George's company it is greatly aggravated when the situation is reversed. Aside from poor office methods, carelessness and the like, which contribute their share to the whole, you will find consolidated shipments also a continual source of offense. To secure the advantage of c. l. freight rates, many of John Smith's shipments are pooled with those of other buyers. One bill of lading is issued by the steamship company and the pooled shipment is consigned to some local distributing agent. George has always depended on his bills of lading to remind him to declare his shipments. On these pooled shipments he receives no such document, and sans reminder, sans declaration. When a loss occurs, however, there is an automatic check on the situation. Nothing is or can be overlooked. Admittedly, then, you assume all of your client's losses with but little or no check on your part of your chances to break even through full declaration on shipments where no loss occurs.

From reading the foregoing one might well conceive that I was prepared to offer a bullet-proof remedy for this trouble. This is not the case. I quite realize the manifest impossibility of your spending all your spare time at the keyhole of John Smith's office. In the past I have heard of a plan for a system of checking manifests through a central bureau employed in the common interest of all companies. Theoretically, there is much that could be said in favor of this idea. Such a scheme would, however, be necessarily of such an elaborate nature as to render it entirely impracticable.

My only object in presenting the above, is to state the existing facts, for the information of the few uninitiated and as a reminder for the great majority. As stated before, I have no cure-all to offer, but I think it eminently worth while for you to have this leak in mind at all times and be therefore prepared to contest it as the opportunity offers.

"FRANCIS ADRION."

# AMERICAN SHIPBUILDING

## Work in Prospect

Bids on a diesel-propelled 94-foot steel combination freight and passenger steamer have been asked for by Edwin C. Bennett, naval architect and consulting engineer of New York. The vessel is to be delivered at New Orleans for ferry service on the Mississippi River.

Mr. Bennett is also preparing plans and specifications for a twin-screw 12,000-ton freight steamer of special design for trans-Atlantic service. The building of this vessel is contingent upon the passing of a subsidy bill that will make it possible for an American shipowner to meet the competition of foreign ship operating costs.

Among the new contracts for which bids have been asked or are about to be asked are: a new freight and passenger vessel for the Norfolk & Mobjack Bay Steamship Company, of capacity and design superior to those already operated by that company; three coastwise freighters for the Eastern Steamship Company; a cable steamship 190 feet long for the Pacific Coast, and a 120-foot freight and passenger motorboat, Cox & Stevens, naval architects; two 9000-ton deadweight capacity colliers for the New England Transportation & Fuel Company, Boston; two steel, single-screw combination freight and passenger coal-burning steamships for the Ocean Steamship Company. These latter vessels will practically be duplicates of the City of Montgomery and City of St. Louis and will be used in the coastwise trade.

## New Contracts

**The Bethlehem Shipbuilding Corporation,** $300,000 contract by the Bush Terminal Company of New York for the construction of three steel car floats. The floats, which will be built at the Harlan plant, will be 270 feet long. They are to be used for ferry service in New York harbor and will be fitted with all modern equipment for that purpose.

**Bethlehem Shipbuilding Corporation, Union Plant,** 12,400-barrel tanker for bay and coastwise service, Standard Oil Company of California.

**Consolidated Shipbuilding Corporation,** Morris Heights, New York, steel motor cruiser for Charles Ringling; 120 feet over-all.

**Newport News Shipbuilding & Drydock Company,** Newport News, Virginia, diesel yacht; 172 feet overall; 26 feet beam; 15 feet 6 inches deep; estimated keel-laying July.

**New London Ship & Engine Company,** Groton, Connecticut; equipping all "S" type 850-ton submarines with 8-inch shafts, at a cost of $2,500,000.

The bow of the Japanese navy's fuel ship Kamoi as it appeared when she was being launched at the yard of the New York Shipbuilding Corporation.

## Keel-layings

Light vessel 108, U. S. Department of Commerce, Bath Iron Works, Ltd., Bath, Maine, May 24; also light vessel 109, May 31.

Yacht, G. W. Megeath, DeFoe Boat & Motor Works, Bay City, Michigan, June 28; also yacht, builder's account, June 28; and steel derrick lighter, Gillespie Contracting Company of New York, June 10.

Barge, Rockland & Rockport Lime Corporation, New York Shipbuilding Corporation, Camden, New Jersey, June 14; also sister to above, June 19.

Sidewheel car ferry, Missouri-Illinois Railroad Company, The Charles Ward Engineering Works, Charleston, West Virginia, June 8.

Steam schooner, S. S. Freeman & Company, G. F. Matthews, Portland, Oregon, June 16.

Double-ended steel ferryboat, San Francisco-Oakland Terminal Railways, Los Angeles Shipbuilding & Drydock Corporation, San Pedro, California, June 29.

## Launchings

Steel motor houseboat, John Ringling, Consolidated Shipbuilding Corporation, Morris Heights, New York, June 24.

Steel derrick lighter, Gillespie Contracting Company of New York, DeFoe Boat & Motor Works, Bay City, Michigan, June 28.

Kamoi, fuel ship Japanese Navy, New York Shipbuilding Corporation, Camden, New Jersey, June 8.

Millville, ferryboat Pennsylvania Railroad, Sun Shipbuilding Company, Chester, Pennsylvania, May 8; also Haddonfield, sister to above, May 15.

Destrehan, sternwheel towboat Pan American Petroleum & Transport Company, The Charles Ward Engineering Works, Charleston, West Virginia, June 1.

Francois Lake Ferry No. 2, steel ferryboat, Provincial Government, Prince Rupert Drydock & Shipyard, Prince Rupert, B. C., July 10.

Charles Dick, National Sand & Material Company, Welland, Ontario, Collingwood Shipbuilding Company, Collingwood, Ontario, May 27.

## Deliveries

American Girl, freight vessel, H. E. Searfoss, DeFoe Motor & Boat Works, Bay City, Michigan, June 10; also steel derrick lighter, Gillespie Contracting Company of New York, June 30.

S-49, submarine U. S. Navy, Lake Torpedo Boat Company, Bridgeport, Connecticut, June 5; also S-51, June 24; both commissioned at Bridgeport.

Millville, ferryboat Pennsylvania Railroad, Sun Shipbuilding Company, Chester, Pennsylvania, June 6; also Haddonfield, sister to above, June 12.

## Japanese Navy Launching

The Kamoi, launched June 8 at the yards of the New York Shipbuilding Corporation, at Camden, New Jersey, is a fuel supply ship ordered by the Imperial Japanese Navy. On a length of about 500 feet and a designed draft of 28 feet the vessel has a displacement of 20,000 tons and a deadweight carrying capacity of about 13,000 tons. She is designed to carry 10,000 tons of cargo oil; provision also being made for alternately carrying about 2000 tons of cargo coal.

The vessel is electrically propelled and is expected to make a speed of 15 knots with 8000 shaft horsepower. The boilers are of special design and are coal firing; provision being made, however, for auxiliary oil firing. The Kamoi will be the first electrically propelled ship of the Imperial Japanese Navy.

The Kamoi is the first Japanese naval vessel to be built in the United States since the cruisers Chitose and Kasagi were constructed about twenty-five years ago. Within the last quarter-century Japan has developed its shipbuilding so greatly that most naval vessels are built at home, and what have gone abroad went to Great Britain.

## News of the Yards

Captain C. H. Cates has settled out of court for $2600 his claim against the Pacific Steamship Company's vessel Admiral Farragut. About three months ago the ship, while undergoing repairs at the Wallace Shipyards, Vancouver, B. C., broke loose from her moorings, launched herself, floated out into the tideway, and, her seacocks being open, was filling rapidly when Captain Cates towed her to a safe beach. The captain sued for $26,000 salvage, 10 per cent of the estimated value of the vessel.

* * *

D. J. Hanlon, Oakland, California, has been awarded judgment of $43,245 against George W. McNear, Inc., San Francisco, in his suit for $52,000 covering repairs to the tanker Asuncion in 1920. When ready for the water, after being repaired, the vessel stuck on the ways, causing a delay of twenty days. Alleging a loss of $60,000 in shipping profits because of this delay, the McNear Company refused to pay the bill. Hanlon filed suit; the McNear Company filed a counter-suit asking that the repair bill be offset by this loss and for additional damages also. The court refused to allow the McNear claim, but granted a deduction of $8000 from the amount sued for by Hanlon. This covered a penalty of $400 a day, as provided in the repair contract.

The referee in bankruptcy, who was appointed by the court to investigate the solvency of the Hanlon Drydock & Shipbuilding Company upon the filing of a petition seeking to have the company declared bankrupt, has reported after a thorough investigation of its books that the company is entirely solvent.

* * *

On instructions from the Canadian government the Department of Marine has asked for bids on two unfinished wooden hulls, one about 60 per cent and the other between 20 and 30 per cent completed, on the ways at the Cholberg Shipyard, Vancouver, together with all materials and accessories acquired and intended for the completion of the vessels. These are two of the four barkentines that were to be built by the Victoria, B. C., Shipowners, Limited, for the lumber trade from British Columbia. The cost of the vessels, $250,000 each, was to be borne 70 per cent by the Dominion government and 30 per cent by the 801 Victoria stockholders of the company. The first barkentine to be launched, the S. F. Tolmie, cost $94,081.43 in excess of the estimate. The government assumed control, and work on the other hulls was ordered stopped. It is these two hulls that the government is trying to dispose of. The fourth ship was never started. The S. F. Tolmie, later completed by the Department of Marine, is being operated by the Canadian Government Merchant Marine and is making a reputation as a fast sailer and a good, seaworthy vessel.

* * *

A. M. MacDonald of Seattle has received from the Shipping Board $277,000 in settlement of the claims of the Patterson - MacDonald Shipbuilding Company. These claims were based on contracts awarded in 1918 for the construction of five wooden steamships and canceled upon the declaration of peace. The same shipyard was awarded contracts by the Australian government for the building of ten 4200 - ton wooden vessels, five steamships and five motorships. Nine were built, and Mr. MacDonald has been notified of the approval of his claims against that government also.

* * *

Work has commenced at the Robertson Shipyard in Alameda, California, on the diesel electric ferryboat Golden State, sister to the Golden Gate Ferry Company's vessel, the Golden Gate. It is expected she will be completed in five months.

* * *

Claims aggregating $17,936,646.07 against the United States Shipping Board Emergency Fleet Corporation have been settled by cash for $3,903,322.32 from funds recently made available through the Independent Office Appropriation Bill. Individual claims of less than $1000 totaling $109,703.19 have been disposed of by payment of $29,951.08 cash. Current funds of the Emergency Fleet Corporation on hand prior to the approval of the new appropriations bill were used for this disbursement.

Due to curtailed appropriations for the maintenance of the naval establishment, Acting Secretary of the Navy Theodore Roosevelt has issued an order for a reduction in civilian personnel that will affect at least 10,000 employes in the navy yards.

* * *

The Munson Steamship Lines have purchased from the Shipping Board two McIntosh & Seymour 900-horsepower diesel engines. The board has the following diesel engines for sale: 2 Bolinder 320 H. P.; 5 McIntosh & Seymour 750 H. P.; 10 Skandia Pacific 825 H. P.; 2 McIntosh & Seymour 900 H. P. Most of these are at Hog Island, Pennsylvania, and Alameda, California. The board has also sold at public auction 202 unassembled 1400 H. P. triple expansion marine engines, located in various parts of the country, for $222,860. Three thousand tons of unfabricated ship steel at Alameda, California, have been sold to the Hyman-Michaels Company.

* * *

The Nippon Yusen Kaisha has decided to build two freighters of the Akita Maru type. The ships of 3500 tons gross each will be built by the Mitsubishi shipyard, Nagasaki, at yen 130 a ton, and when completed will be operated in the Japan-Shanghai service. These vessels are part of the company's shipbuilding program of 500,000 tons.

* * *

According to a plan reported to have been outlined by the Japanese Navy Department for the consideration of the cabinet, 15 cruisers, 28 destroyers, 28 submarines, 2 tenders and 14 special ships will be built between 1923 and 1927 at a cost of yen 564,000,000.

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It is reported that the Navy Department of Japan does not intend to reduce the forces of skilled workmen at present employed in the navy yards, but the ordnance and armor works will be immediately affected by the naval cut as well as about 10,000 men and several hundred officers.

* * *

The Japanese ships Amagi and Akagi, formerly under construction as battle-cruisers, are being converted into airplane carriers. They are designed to carry 50 planes each and are expected to be ready for service in 1924. The 9000-ton carrier Hosho, with space for 20 airplanes, is also expected to be completed that year.

* * *

An official investigation of the charges made by the Kobe branch of the League of Labor that the

Kawasaki Dockyard Company, which receives large orders from the Japanese government for warships, locomotives and machinery, had been passing defective goods by means of forged seals has resulted in the conviction by the preliminary court of two engineers and two foremen formerly in the employ of the Kawasaki Company. The court found that both the seal of the naval inspector and the acceptance seal of the navy had been forged and used more than 500 times between April, 1920, and January, 1922. The findings of the court did not implicate the company's management in the forgeries. The charges were preferred last February after a large number of employes had been laid off at the Kawasaki shipyard.

* * *

Announcement has been made that the Navy Department will not adjust wages and salaries of the civilian employes at the yards and stations until January 1, 1923. It is also the intention of the Navy Department to continue the present five-day week until general conditions, both as to governmental work and outside employment, materially improve. The decision not to re-establish the six-day week on July 1 is due to the fact that such change would necessitate additional lay-offs.

* * *

Congressman Hull has introduced a bill, which has been referred to the committee on labor, to create a board of adjustment for navy yard and arsenal employes to consist of twelve members, three appointed by the secretary of war, three by the secretary of the navy, and six chosen by the civilian employes; all to serve without compensation. The function of the board would establish annually a fair and reasonable wage and salary schedule for all classes of employes of navy yards and arsenals. In determining such wages the board would take into consideration the maintenance of a standard of living for the worker and his family which will insure health and decency; the relation between wages and the cost of living; the average change in per capita productivity of manufacturing industries in the United States over a period covering the preceding ten years; the progress made in per capita production in manufactories in the United States since 1900 which has not already been reflected in increased wages; the training and skill required; the degree of responsibility; and inequalities of increases in wages or of treatment, the result of previous wage orders or adjustments. The board would also act as a final court of appeal in all disputes arising over conditions and interpretations of laws.

* * *

The Mallory passenger liner San Jacinto recently made a successful trial trip from the Tietjen & Lang plant of the Todd Shipyards Corporation, after being virtually rebuilt for the Galveston service of the Mallory Line. She has been converted from coal to oil burning by the installation of Todd mechanical burners; new engines, new boilers and new auxiliaries have been installed, and new and improved passenger accommodations added. The San Jacinto has always been a popular and successful passenger ship, as well as an important freight carrier, and is one of the fastest and most comfortable vessels in the coastwise trade. The San Jacinto was one of the first to be requisitioned by the government and, with the Henry R. Mallory, was one of the first vessels to carry troops and Y. M. C. A. workers to France.

The Mallory Line is the pioneer company in steamship service along the Atlantic Coast and the Gulf of Mexico. It has always kept up with the demand for increased facilities, modern accommodations and speed. In fact, next to the Henry R. Mallory, the San Jacinto, with her new engines and oil-burning equipment, is expected to be the fastest vessel on the coast.

* * *

The biggest reconditioning job that has gone to the port of New York since the war has been awarded to the Robins Drydock Company's plant of the Todd Shipyards Corporation for $229,000. This job involves the fitting of the United States Shipping Board's steamer President Pierce, ex-Hawkeye State, with de luxe accommodations for third-cabin passengers and the general overhauling of the vessel for the trans-Pacific service of the Pacific Mail Steamship Company. The contract calls for the work to be completed by August 20. The President Pierce is the fourth Shipping Board vessel to be awarded Todd's Erie Basin yard for refitting. The bids received indicate the rates for repair and reconditioning that prevail in New York. Other bids to do the work on the President Pierce were: Morse Drydock & Repair Company, $242,500; Sun Shipbuilding Company, $257,492; Bethlehem Shipbuilding Corporation, $264,000.

# Construction and Repairs

## Pacific Coast

### BETHLEHEM SHIPBUILDING CORPORATION, LTD. UNION PLANT

#### Potrero Works

Purchasing Agent: O. W. Streett.

Submarines USN: S-31, hull 136; S-32, hull 137; S-33, hull 138; S-34, hull 139; S-35, hull 140; S-36, hull 141; S-37, hull 142; S-38, hull 143; S-39, hull 144; S-40, hull 145; S-41, hull 146; **S-32 delivered June15/22.**

#### Alameda Works

Chilore, hull 5309, combination ore and coal carrier Ore Steamship Co; 571-6 LOA; 550-1 LBP; 72 molded beam; 44 molded depth; 32-4 loaded draft; 11½ loaded speed; 20,000 DWT; Curtis turbines with Falk reduction gears, 5000 SHP; 3 Scotch SE boilers, 17-6x12, each 4287 sq ft; oil burners; keel Apr17/22.

Lebore, hull 5310, combination ore and coal carrier Ore Steamship Co; sister to above.

San Mateo, hull 5314, ferryboat Jas Rolph & Co; 230 LOA; 63-6 beam over guards, 42 molded; 19-6 molded depth; TE eng, 1400 IHP; propeller drive; 3 WT boilers; keel Aug27/21; launch May9/22.

No name, hull 5315, ferryboat Jas Rolph & Co; sister to above; keel Feb20/22.

No name, hull 5316, ferryboat Jas Rolph & Co; sister to above; keel May12/22.

### CHOLBERG SHIPYARD, VANCOUVER, B. C.

Purchasing Agent: W. Meed.

(These vessels to be completed by Dominion government.)

Sir Henry Drayton, hull 5, 4-masted barkentine Victoria Shipowners, Ltd; 250 LOA; 45-6 beam; 21-10 loaded draft; 2400 DWT; sailing vessel; shaft logs fitted for auxiliary but no machinery installed; keel May 15/20.

No name, hull 6, 4-masted barkentine Victoria Shipowners, Ltd; sister to above; keel June4/20.

No name, hull 7, 4-masted barkentine Victoria Shipowners, Ltd; sister to above.

### HANLON DRYDOCK & SHIPBUILDING COMPANY, OAKLAND, CALIF.

Purchasing Agent: R. Barker.

Dan F. Hanlon, hull 89, steam schr. D. J. Hanlon; 2500 DWT; 1400 IHP engines; 2 B&W boilers; work suspended.

### LOS ANGELES SHIPBUILDING & DRYDOCK CORPORATION, SAN PEDRO, CALIF.

Purchasing Agent: L. R. McFie.

No name, hull 37, double-ended steel ferryboat San Francisco-Oakland Terminal Railways; 225 LBP; 42 molded beam, 62-7 over guards; 11-6 loaded draft; 13 loaded speed; turbo-electric eng, 1350 IHP; 2 B& W WT boilers, 5000 sq ft total HS, 225 WP, 65 superheat, natural draft, oil-burning; **keel June29/22**; launch Sept25/22, est; deliver Nov25/22, est.

No name, hull 38, double-ended steel ferryboat San Francisco-Oakland Terminal Railways, sister to above; keel July/22, est; launch Oct2/22, est; deliver Dec8/22, est.

### NAVY YARD, PUGET SOUND

Medusa, repair ship for government; 460 LBP; 70 beam; about 19 loaded draft; 17-5 loaded speed; turbine eng, 7000 IHP; 2 WT express type boilers; 10,000 tons disp; keel Jan2/20; launch and deliver dates not set.

Holland, submarine tender for government; 460 LBP; 61 beam; about 20 loaded draft; 16 K loaded speed; turbine eng, 7000 IHP; two WT express type boilers; 10,000 tons disp; keel Apr11/21.

### NAVY YARD, MARE ISLAND

Montana, battleship USN; 660 LBP; 105 beam; 33 loaded draft; 23 loaded speed; 42,200 disp; turbo-electric engs, 60,000 SHP; 12 Bu's express boilers, 74,040 sq ft; keel Sept 1/20.

Decatur, destroyer USN; 310 LBP; 30-11½ beam; 9-4 loaded draft; 35 loaded speed; 1215 disp; geared turbine eng, 26,000 SHP; 4 Normand boilers, 27,000 sq ft; keel Sept15/20; launch Oct29/21.

### PRINCE RUPERT DRYDOCK & SHIPYARD, PRINCE RUPERT, B. C.

Manager: J. H. Pillsbury.

Francois Lake Ferry No. 2, steel ferryboat for Provincial Government; 66 LBP; 27 beam, 8 loaded draft; 12 loaded speed; twin gas engs, 50 IHP; keel Feb/22; **launch July10/22**; deliver July20/22, est.

### W. F. STONE & SON, OAKLAND, CALIF.

Rascal, sloop builder's account; 41 LBP; 8-6 beam; 6 deep; launch May16/22.

Corinthian II, sloop Corinthian Yacht Club; 35 LBP; 8-8 beam; 6 deep.

No name, aux sloop builder's account; 49 LBP; 14 beam; 5-6 deep; gas eng, 15 IHP.

Sparrow, tug Alaska Packers' Association; 65 LBP; 16 beam; 5-6 deep; gas eng, 80 IHP.

No name, trawler Western Fish Company; 65 LBP; 16 deep, 7 loaded draft; Diesel eng, 120 IHP.

No name, trawler Western Fish Company; sister to above.

Pile-driver Naknek Packing Company; 40 LBP; 20 beam; 3 loaded draft.

### TODD DRYDOCK & CONSTRUCTION CORP., TACOMA

Purchasing Agent: C. L. Bankson.

Omaha, hull 100, scout cruiser US N; 555-6 LOA; 550 LBP; extreme beam 55-4; molded beam 54-9; depth molded 26; mean loaded draft 13-6; disp 7100 tons; Westinghouse Parsons turbines and reduction gear, 105,000 IHP; designated speed 34; 12 Yarrows WT boilers; keel Dec6/18; launch Dec14/20.

Milwaukee, hull 106, scout cruiser USN; sister to above; keel Dec13/18; launch Mar24/21.

Cincinnati, hull 107, scout cruiser USN; sister to above; keel May15/20; launch May23/21.

## Atlantic, Lakes, Rivers

### AMERICAN BRIDGE COMPANY, PITTSBURGH, PENN.

Purchasing Agent: W. G. A. Millar.

Fifteen decked barges, 120 LBP; 30 beam; 7 deep, US Engineers, Memphis, Tenn.; 9 launched, 6 delivered.

Twelve sand barges, J. K. Davison & Bro., Pittsburgh, 135 x 26 x 10; 12 launched; all delivered.

One dredge hull, H. H. Halliday Sand Co, Cairo, Ill; 110 x 30 x 5-6; launch June6/22.

Four decked barges, undisclosed interests, 180x36x8; 3 launch June/22.

One wharfboat, undisclosed interests, 160x26x5; launch June6/22.

Two carfloats, Long Island R R Co, 292x42x11-6; under construction at Federal Shipbuilding Co, Kearny, N. J.; launch Sept/22, est.

### THE AMERICAN SHIP BUILDING CO., LORAIN, OHIO

Purchasing Agent: W. H. Gerhauser.

No name, hull 781, bulk freighter H. K. Oakes Company; 596 LBP; 64 beam; 21 loaded draft; 12 mi loaded speed; 13,000 DWT; TE engs, 2400 IHP; 3 Scotch boilers, 14x11, 185 WP; keel July/22, est; launch Oct/22, est; deliver Nov/22, est.

No name, hull 782, bulk freighter Pittsburgh Steamship Co; 580 LBP; 60 beam; 21 loaded draft; 12 mi loaded speed; 12,500 DWT; TE engs, 2300 IHP; 3 Scotch boilers, 13-6x11, 185 WP; keel July/22, est; launch Oct/22, est; deliver Nov/22,est.

No name, hull 783, bulk freighter Pittsburgh Steamship Co; sister to above; keel Dec/22, est; launch Mar/23, est; deliver May/23, est.

No name, hull 784, bulk freighter G A Tomlinson Co; sister to above; keel Dec/22, est; launch Mar/23, est; deliver May/23, est.

### BATH IRON WORKS, LTD., BATH, MAINE

Purchasing Agent: John L. P. Burke.

Light vessel 106, hull 87, second-class light vessel US Dept of Commerce, 109-6 LBP, 30 beam, 14-4 loaded draft, 9½ speed; comp eng, 400 IHP; 2 Scotch boilers, 10-6 x 11-4; keel Apr12/22; launch Oct/22, est; deliver Dec/22, est.

Light vessel 107, hull 88, sister to above; keel Apr14/22; launch Nov/22,est; deliver Jan/23, est.

Light vessel 108, hull 89, sister to above; **keel May24/22**; launch Jan/23, est; deliver Mar/23, est.

Light vessel 109, hull 90; sister to above; **keel May31/22**; launch Mar/23, est; deliver Apr/23, est.

Light vessel 110, hull 91, sister to above; keel Aug1/22, est; launch May/23, est; deliver June/23, est.

### BETHLEHEM SHIPBUILD'G CORPORATION, BALTIMORE DRYDOCK PLANT, BALTIMORE

Fort McHenry, hull 125, tanker builder's account; 340 LBP; 49 beam; 23-6 loaded draft; 10½ loaded speed; 6050 DWT; rec eng, 2000 I HP; 2 Scotch boilers, 15-6; keel Nov24/20; launch Feb1/22.

Hull 129, carfloat Lehigh Valley R. R.; 270 LBP; 38 beam; 10-6 loaded draft; keel Apr26/22.

Hull 130, carfloat Lehigh Valley R. R.; 325 LBP; 38 beam; 10-6 loaded draft; keel Apr26/22.

Hull 131, carfloat Lehigh Valley R. R.; 180 LBP; 36 beam; 9 loaded draft.

### BETHLEHEM SHIPBUILDING CORP., FORE RIVER PLANT, QUINCY, MASS.

Lexington, hull 1300, battle-cruiser U S N.

Raleigh, hull 1382, scout cruiser U S N.

Detroit, hull 1383, scout cruiser U S N.

Massachusetts, hull 1400, battleship USN.

S-19, hull 1309, submarine U. S. N.
S-21, hull 1312, submarine U. S. N.
S-24, hull 1315, submarine U. S. N.
S-25, hull 1316, submarine U. S. N.
S-26, hull 1317, submarine U. S. N.
S-27, hull 1318, submarine U. S. N.
S-28, hull 1319, submarine U. S. N.
S-29, hull 1320, submarine U. S. N.
S-42, hull 1389, submarine U. S. N.
S-43, hull 1390, submarine U. S. N.
S-44, hull 1391, submarine U. S. N.
S-45, hull 1392, submarine U. S. N.
S-46, hull 1393, submarine U. S. N.
S-47, hull 1394, submarine U. S. N.

### BETHLEHEM SHIPBUILDING CORP., HARLAN PLANT, WILMINGTON, DEL.

Hull 3478, yacht Keith Spalding; 160 LBP; 30 beam; 15-3 deep; 360 DWT; two 6 cyl 180 HP Nelseco diesel engs.

### BETHLEHEM SHIPBLDG. CORP., SPARROWS POINT PLANT, SPARROWS POINT, MD.

Marore, hull 4212, ore and oil Ore SS Co; 550 LBP; 72 beam; 32-4 loaded draft; 11½ loaded speed; 20,000 DWT; turb eng, 4600 IHP; 3 Scotch boilers, 17-6x12; keel May 2/21; launch Apr1/22.

Steelore, hull 4213, ore and oil Ore SS Co; sister to above; keel July 20/21.

### COLLINGWOOD SHIPBUILDING CO., LTD., COLLINGWOOD, ONTARIO

Charles Dick, hull 71, National Sand & Material Company, Ltd., Welland, Ontario; 250 LBP; 43 beam; 16-6 loaded draft; 9 loaded speed; 2800 DWT; TE engs; 1200 IHP; 2 Scotch marine boilers 14-6x10-8; keel Feb21/22; launch May27/22; deliver July 15/22, est.

### CONSOLIDATED SHIPBUILDING CORPORATION, MORRIS HEIGHTS, N. Y.

Purchasing Agent: Bruce Scrimgeour.

Steel motor houseboat for John Ringling; 125 LOA; 21 beam; 4 draft; 12 speed; two 6-cyl 180 HP Nelseco diesel engs; keel Mar22/22; launch June24/22.

Steel motor cruiser for Charles Ringling; 120 LOA.

### WILLIAM CRAMP & SONS SHIP & ENGINE BUILDING CO., PHILADELPHIA

Purchasing Agent: Ed. C. Geehr.

Richmond, hull 448, scout cruiser U. S. N.; keel Feb16/20; launch Sept 29/21; 90.3 per cent comp July1/22.

Concord, hull 449, scout cruiser USN; keel Mar29/20; launch Dec 15/21; 85.2 per cent comp July1/22.

Trenton, hull 501, scout cruiser USN; keel Aug18/20; 58 per cent comp July1/22.

Marblehead, hull 502, scout cruiser USN; keel Aug4/20; 47.2 per cent comp July1/22.

Memphis, hull 503, scout cruiser USN; keel Oct14/20; 42.4 per cent comp July1/22.

Installing Diesel engines in M.S. Missourian.

### DEFOE BOAT & MOTOR WORKS, BAY CITY, MICH.

No name, hull 60, yacht G. W. Megeath; 98 LBP; 15 beam; 6 draft; 14 speed; Standard gas eng; keel June 28/22; launch Aug1/22, est; deliver Nov1/22, est.

No name, hull 61, yacht builder's account; sister to above; keel June 28/22; launch Aug15/22, est; deliver Apr15/23, est.

American Girl, hull 62, frt vessel H. E. Searfoss; 65 LBP; 14 beam; 6 draft; 10 speed; Kahlenberg heavy oil eng; keel Mar20/22; launch May 28/22; deliver June10.

No name, hull 63, wood yacht K. M. Devos; 65 LBP; 12½ beam; 4 draft; 22 speed; gas eng; keel Mar 10/22; launch July25/22, est; deliver Aug1/22, est.

No name, hull 64, wood yacht J. H. Reid; 42 LBP; 11 beam, 3½ draft; 11 speed; gas eng; keel Mar 30/22; launch July25/22, est; deliver Aug1/22, est.

No name, hull 65, steel derrick lighter, Gillespie Contracting Co of N Y; 82 long; 32 beam; 8 deep; keel June10/22; launch June28/22; deliver June30/22.

### FEDERAL SHIPBUILDING CO., KEARNY, N. J.

Purchasing Agent: J. L. Hastings.

Hull 68, freighter undisclosed interests; 425 LBP; 56 beam; 27 loaded draft; 11½ loaded speed; 10,025 DWT; Parsons turbines, 3100 SHP; 3 Scotch boilers, 15-3x11-3¾; keel Mar16/22; launch Aug1/22, est; deliver Sept1/22, est.

Hulls 69-70, steel oil barges, Gulf Refining Company; 158 long; 37 beam; 11-6½ deep.

No name, hull 71, steel drill boat War Department, sub-contract from Dravo Contracting Company; 157 LBP; 52 beam; 12-9 deep.

No name, hull 72, coastwise passgr and frt Merchants & Miners Transportation Co; 350 LBP; 52 beam; 19 loaded draft; 12 loaded speed; TE engs, 2700 IHP; 4 SE Scotch boilers, 14-3x11; keel July15/22, est; launch Nov15/22, est; deliver Jan15/23, est.

No name, hull 73, coastwise passgr and frt Merchants & Miners Transportation Co; sister to above; keel Aug15/22, est; launch Dec15/22, est; deliver Feb15/23, est.

Hulls 74-75, steel car floats, Long Island Railroad, 292 long; 43-8 beam; 11-6 deep.

### FRASER, BRACE, LIMITED, THREE RIVERS, QUEBEC

Lake freighter George Hall Coal Company of Canada; 250 LBP; 43 beam; 20-6 deep; 12 loaded speed; TE eng, 19x32x56-36 stroke; 2 Scotch marine boilers, 14-7x10-8, coal burning.

Sister to above.

Sister to above.

Sister to above.

### GREAT LAKES ENGINEERING WORKS, RIVER ROUGE, MICHIGAN

Purchasing Agent: H. O. Kretlow.

James MacNaughton, hull 242, bulk frt Wilson Tran Co, Cleveland; 580 LBP; 60 beam; 20 loaded draft; 11½ miles loaded speed; 11,800 gross, TE engs, 1880 IHP; 3 Scotch boilers, 13-6; keel May3/22; launch Aug1/22, est; deliver Sept1/22, est.

### J. C. JOHNSON, PORT BLAKELEY, WN.

Wooden scow, builder's account, 110x36x11; deliver July15/22, est.

### KYLE & PURDY, INC., CITY ISLAND, NEW YORK CITY

Purchasing Agent: T. A. Kyle.

No name, hull 154, steel ferryboat department of plants and structures, City of New York; 90 LBP; 30 beam; 6-8 loaded draft; 10 miles loaded speed; 100 DWT; comb eng, 200 IHP; Roberts tube boilers.

### LAKE TORPEDO BOAT CO., BRIDGEPORT, CONN.

Purchasing Agent: C. D. Maxfield.

S-48, hull 48, submarine U S N; launch Feb26/21.

S-49, hull 49, submarine U S N; launch Apr23/21; delivered to Navy Dept and commissioned at Bridgeport June5/22.

S-51, hull 51, submarine U S N; launch Aug20/21; delivered to Navy Dept and commissioned at Bridgeport June24/22.

### MERCHANT SHIPBUILDING CORPORATION, CHESTER, PENN.

Vice-President: J. L. Ackerson.

Missourian, hull 386, freighter American-Hawaiian SS Co; 445 LBP; 59-8 beam; 28-6 loaded draft; 11½ speed; 11,000 DWT; 2 6cyl, 4-cycle Diesel engs, 4500 metric; 1 vertical donkey, 400 sq ft HS; keel Feb10/21; launch Dec14/21; at Cramp yard for installation of diesel engines.

### NAVY YARD, BOSTON

Whitney, destroyer tender No. 4 USN; 460 LBP; 60-10⅛ molded beam; 21-0½ normal draft; 16 loaded speed; 10,600 normal disp; geared Parsons turbs, 7000 SHP; 2 WT exp boilers; keel Apr 23/21; launching indefinite.

### NAVY YARD, PHILADELPHIA

Dobbin, hull 7, destroyer tender USN; 460 LBP; 60-10 beam; 21 loaded draft; 16 loaded speed; 10,600 tons disp; Parsons geared turb single screw engs, 7000 SHP; 2 WT boilers; keel Dec23/19; launch May 5/21; deliver date not determined.

Constitution, hull 8, battle cruiser USN; 850 LBP; 105-4 beam; 30-11½ loaded draft; 33½ loaded speed; 43,500 disp; electric drive, 180,000SHP; 16 WT boilers; keel Sept25/20.

United States, hull 9, battle cruiser USN; 850 LBP; 105-4 beam; 30-11½ loaded draft; 33½ loaded speed; 43,500 disp; electric drive, 180,000 SHP; 16 WT boilers; keel Sept25/20.

### NEWPORT NEWS SHIPBUILDING & DRYDOCK COMPANY, NEWPORT NEWS

Purchasing Agent: James Plummer, 233 Broadway, New York City.

West Virginia, hull 211, battleship USN; 600 LBP; 97-3½ beam; 30-6 mean draft; 32,600 normal disp; 21 speed; GE turbo-elec drive, 28,900 SHP; 8 B&W WT boilers, oil, 41,768 sq ft plus 4168 superheat; keel Apr 12/20; launch Nov19/21.

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Constellation, hull 215, battle-cruiser USN; 850 LBP; 101-8¼ beam; 31 mean draft; 43,500 normal disp; 33¼ speed, est; Westinghouse turbo-elec drive, 180,000 SHP; 16 WT boilers, oil, 198,000 sq ft plus 18,000 superheat; keel Aug18/20.

Ranger, hull 215, battle-cruiser USN; sister to above; keel June23/21.

Iowa, hull 258, battleship USN; 660 LBP; 105 beam; 33 mean draft; 43,200 normal disp; 23 speed; GE turbo-elec drive, 60,000 SHP; 12 White-Forster WT boilers, oil, 82,800 sq ft plus 8940 superheat; keel May17/20.

Ohio, hull 265, diesel yacht; 172 LOA; 26 beam; 15-6 deep; keel July/22, est; launch Sept/22, est; deliver Nov/22, est.

## NEW YORK SHIPBUILDING CORPORATION, CAMDEN, N. J.

Purchasing Agent: L. G. Buckwalter.

Eurana, hull 264, bulk oil stock; 419-3 LBP; 56-3 beam; 25-9¼ loaded draft; 10¾ loaded speed; 9870 DWT; 3 cyl TE engs, 3000 SHP; 3 SE Scotch boilers, 15-10x11-4; keel Jan17/21; launch July16/21.

No name, hull 265, bulk oil stock; sister to above.

Saratoga, hull 199, battle cruiser USN; 874 LOA; 850 LBP; 105-5¼ extreme beam; 31 mean draft; 43,500 normal disp; 33¼ loaded speed; GE turbo-electric drive; 180,000 SHP; 16 WT boilers, 198,000 sq ft plus 18,000 superheat; keel Sept25/20.

Colorado, hull 200, battleship USN; 624 LOA; 600 LBP; 97-3½ beam waterline; 30-6 mean draft; 32,600 normal disp; 21 loaded speed; Westinghouse turbo-electric drive, 28,900 SHP; 8 B&W WT boilers, 41,678 sq ft plus 4169 superheat; keel Mar29/19; launch Mar22/21.

Washington, hull 201, battleship USN, sister to above; keel June30/19; launch Sept1/21.

Kamoi, hull 267, fuel ship Japanese Navy; 497-8 LOA; 67 beam; 28 designed draft; 15 loaded speed; 13,000 DWT; elec drive, 8000 SHP; 4 WT boilers; keel Sept14/21; **launch June8/22.**

Hull 269, carfloat Brooklyn Eastern District Terminal; 340 feet long; keel May4/22; launch July15/22, est.

Hull 270, barge Rockland & Rockport Lime Corporation; length 196-10; **keel June14/22.**

Hull 271, sister to above; **keel June19/22.**

Hulls 272-274, inc, sisters to above; keels not laid.

## PORT ARTHUR SHIPBUILDING CO., PORT ARTHUR, ONT.

Purchasing Agent: W. E. Decker.

Hull 47, single-deck bulk freighter Mathews Steamship Co; 530 LBP; 58 beam; 12 loaded speed; 10,000 DWT; 3-cyl TE engs, 25½-41-67x42, 2100 IHP; 3 Scotch boilers, 13-6; keel May10/22; launch Aug15/22, est; deliver Sept15/22, est.

## THE PUSEY & JONES COMPANY, WILMINGTON, DELAWARE

Vice-president and general manager: W. G. Coxe.

No name, hull 1020, combination steamer, sound type, Seaboard Bay Line; 320 LBP; 44 beam at waterline; 14-6 loaded draft; 18 loaded speed; 800 DWT; 4-cyl TE engs, 3000 IHP; 4 Scotch boilers, 13-3x11-6; keel Feb23/22; launch Aug 25/22, est; deliver Oct/22, est.

No name, hull 1021, combination steamer, sound type, Seaboard Bay Line; sister to above; keel Feb23/22; launch July25/22, est; deliver Nov/22,est.

## STATEN ISLAND SHIPBUILDING COMPANY, STATEN ISLAND, NEW YORK

Purchasing Agent: R. C. Miller.

No name, hull 740, ferryboat Erie R R Co; 206 LBP; 44-1 beam; 17-4 loaded draft; 1538 gross; rec engs, 1200 IHP; 2 Scotch boilers, 12-9x12-9; keel Aug/22, est.

No name, hull 741, ferryboat City of New York; 215 LBP; 45 beam; 18 loaded draft; elec drive, 1900 IHP; 4 B&W WT boilers, 8000 sq ft HS; keel Aug/22, est.

No name, hull 742, ferryboat City of New York; sister to above; keel Aug/22, est.

No name, hull 743, ferryboat City of New York; sister to above; keel Aug/22, est.

Hull 744, Hudson River vehicular tunnel, erection, launching and delivery of river shaft, New York side; keel Aug/22, est.

Hull 745, Hudson River vehicular tunnel, erection, launching and delivery of river shaft No. 1, New Jersey side; keel Aug/22, est.

Hull 746, Hudson River vehicular tunnel, erection, launching and delivery of river shaft No. 2, New Jersey side; keel Aug/22, est.

## SUN SHIPBUILDING COMPANY, CHESTER, PENN.

Purchasing Agent: H. W. Scott.

Agwiscot, hull 42, tanker A. G. W. I. S. Co; 480 LBP; 65-9 beam; 26-7 loaded draft; 12 loaded speed; 12,500 DWT; single screw QE engs, 4300 IHP; 4 SE Scotch boilers, 15-10x11-11¼; keel Dec23/20.

Millville, hull 49, ferryboat Pennsylvania Railroad; 167 long; 55 beam; 14-8 deep; two screws; 3-cyl comp engs, 700 IHP; 2 B&W WT boilers; keel Feb16/22; **launch May 8/22; deliver June6/22.**

Haddonfield, hull 50, ferryboat Pennsylvania R R; sister to above; keel Feb20/22; **launch May15/22; deliver June12/22.**

Passenger vessel Inter - Island Steam Navigation Co., Honolulu; 345 long; 46 beam; 32 deep; 16½ speed; 4-cyl TE engs, 5000 IHP; 4 B&W WT boilers; to carry 434 passengers; keel May16/22; launch Sept30/22, est; deliver Dec24/22, est.

## THE TOLEDO SHIPBUILDING CO., TOLEDO, OHIO

Purchasing Agent: H. M. Ives.

No name, hull 174, cargo Kinsman Transit Co., Cleveland; 590 LBP; 60 beam; 20 loaded draft; 12 mi loaded speed; 12,000 DWT; TE eng, 2000 IHP; 3 Scotch boilers, 13-6; keel July15, est; launch Nov/22, est; deliver Apr15/23, est.

## THE CHARLES WARD ENGINEERING WORKS, CHARLESTON, WEST VIRGINIA

Purchasing Agent: E. T. Jones.

Gen'l Frank M. Coxe, hull 17, river str War Dept; 144 LBP; 28 beam; 9 loaded draft; 16 miles loaded speed; 175 DWT; TE eng, 1050 IHP; 2 Ward WT boilers, 2094 sq ft heating surface; keel July 16/21; launch Mar3/22; deliver Nov1/22, est.

Gen'l John McE. Hyde, hull 18, river str War Dept; sister to above; keel July18/21; launch Mar11/22; deliver Nov1/22, est.

Destrehan, hull 19, sternwheel towboat Pan American Petroleum & Transport Co; 136-6 LBP; 32 beam; 5 loaded draft; simple HP non-condensing eng, 18 in dia by 7 ft stroke, 225 lbs WP; 4 Miss River type boilers, 44 in dia; keel Mar15/22; **launch June 1/22;** deliver July20/22, est.

No name, hull 20, sidewheel car ferry Missouri-Illinois R R Co, subsidiary of St. Joseph Lead Co; 285 LBP; 54 beam; 5 loaded draft; 820 DWT; simple HP non-condensing eng, 22 in dia by 8 ft stroke, 200 lbs WP; 6 Miss River type boilers, 44 in dia, 26 ft long; **keel June8/22;** launch Aug20/22, est; deliver Sept 17/22, est.

# Recent Repair Work

## BETHLEHEM SHIPBUILDING CORPORATION, LTD.

### Union Plant

Miscellaneous: S. C. T. Dodd, El Segundo, S. O. barge 95, F. H. Hillman, W. S. Rheem, Moonlight, Trident, Wellesley, Hauraki, Manukai, Harry Luckenbach, Geo. L. Olsen, Siam, Sea Scout, Newport, Lyman Stewart, Venture, Napa Valley, Governor Irwin, Hoosier State, S. O. barge 91, Ardmore, H. M. Storey, Willpolo, Tahchee, Walter Luckenbach, Mexico, Santa Paula, Adour, Saleier, Tascalusa, Evian, Pleiades, Sinaloa, Lewis Luckenbach, Frederick Luckenbach, Ashbury Park, Coalinga, Honduras, Sea Ranger, Los Angeles, Hoquiam, Bandon, Hartwood, Greenwood, Logan, Los Angeles, Everett, Maui, Chief, General Frisbie, Manulani, Royal Arrow, Miramar, Marama, Mojave, Venetia, San Joaquin. Propeller: Mayfair, Maricopa, Atlas, K. R. Kingsbury, Willpolo (also tailshaft). Pump parts: F. S. Loop. Wildcats: Argyll (2), San Joaquin (2). Extensive repairs: San Pablo, Creole State. Extensive hull repairs: Wheaton. Engine repairs: Tahiti, Olinda, Ti-

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### San Pedro Works

Miscellaneous repairs, drydocking, etc.: J. A. Talbot, San Pedro, Liebre, Virginia Olson (also renewal of stern), S. O. barge No. 7 (also extensive repairs to stern). Miscellaneous repairs: Catherine G. Sudden, Avalon (also crankshaft work on main engine), La Placentia, K. R. Kingsbury, Yorba Linda. Boiler repairs: Charles Christenson, Carmel (also valve work). Engine repairs: Trinidad (also piping), Mundelta, Eulalia. Windlass repairs: Bohemian Club. Hull repairs: Multnomah. Pump repairs: Cuba, Grays Harbor. General dredge repairs: John McMullin, Los Angeles. Renewals: Fred Baxter (copper pipe), Florence Olson (McComb strainers).

### MERRILL-STEVENS DRYDOCK & REPAIR COMPANY, JACKSONVILLE, FLA.

Cleaning and painting: Cuba, Governor Cobb. Cleaning, painting, installing new propeller, renewing loose rivets in hull: Jomar. Cleaning, painting, drawing tailshaft for examination: Buckhannon. Cleaning, painting, drawing tailshaft for examination, rewooding stern bearing, installing new propeller: Maple.

### MOORE SHIPBUILDING COMPANY, OAKLAND, CALIF.

Drydocking, cleaning, painting and miscellaneous repairs: Thomas, Relief Lightship 76, Venezuela, Pasadena, Annie Johnson, Montebello. Miscellaneous hull and deck repairs: Wolverine State. Miscellaneous engine repairs: Edward T. Jeffery, Virgil G. Bogue, Canadian Rover, Manulani, West Ivan. Drydocking, cleaning, painting: Rainier (also engine repairs) James Johnson, Arctic (miscellaneous hull repairs), Sonoma (also wheel repairs). Miscellaneous deck and engine repairs: Broad Arrow, Bondowosa, Golden State, Panaman. Miscellaneous deck repairs: Algonquin. New propeller: Willpolo. New condenser head: Standard Arrow. New tailshaft: Humboldt. Engine and hull repairs: Jim Butler.

### NAVY YARD, PUGET SOUND

Docking and miscellaneous repairs: Arizona, Delphy, Chauncey, J. F. Burnes, Somers, Percival, Farragut, Fuller. Miscellaneous repairs: New Mexico, Capella, Gold Star, Seattle (preparation for commissioning). Miscellaneous repairs incidental to operation as district craft: Eagle No. 57, Sotoyomo, Mahopac, Tatnuck, Iroquois, Pawtucket. Care and preservation: Oregon, Missoula, Charlotte.

### LOS ANGELES SHIPBUILDING & DRYDOCK CORPORATION, SAN PEDRO, CALIF.

Diver inspection of bottom: Trinidad. Docking for scaling, painting, extensive general repairs: Sequoia. Overhauling and repairs: Lieutenant Stanley L. Cochrane. Minor machinery repairs: Centralia, Robin Goodfellow, San Pedro, Harvard. Docking, cleaning, painting: Oceania Vance. Piping repairs: Edgar F. Luckenbach, Idaho (minor). Minor engine repairs: Vaquero. Capstan repairs: Yale. Windlass repairs: Nika. Electrical repairs: Henrietta, Boobyalla. Minor hull repairs: Sierra, Jacob Luckenbach. Machinery repairs: Vaquero, Yngaren.

### PRINCE RUPERT DRYDOCK & SHIPYARD, PRINCE RUPERT, B. C.

Cleaning, painting, hull repairs: 3 wooden scows, McCulloch, Canadian Skirmisher (also general overhauling). Various repairs: 28 halibut fishing vessels of all sizes.

### TODD DRY DOCKS, INC., SEATTLE, WASH.

Miscellaneous repairs: Latouche, Kingston, Tacoma, Red Hook, C. M. & St. P. Railway barges 1, 2, 5. Repairs to generator: Thomas Crowley. General repairs and overhauling: Eastern Merchant. Docking, cleaning, painting: Washington Tug & Barge Co. barges 55, 57; Pioneer, Hopestill, Warrior, SolDuc, Jitney. Repairs to mast lights: Protesilaus. Docking for rudder repairs: Admiral Evans. Repairs to deck: Steel Navigator. Docking, cleaning, painting, miscellaneous repairs: Jacob Luckenbach. Making new rudder pintle for Kaga Maru. Propeller blades: Queen. Maintenance repairs: Wheatland Montana. Docking for survey: Edward Luckenbach.

### YARROWS, LTD., VICTORIA, B. C.

Minor engine repairs: El Lobo. Repairs to feed heater: Princess Adelaide. Repairs to ballast pump: Canadian Inventor. Supplying and machining new propeller: Burrard Chief. Docking, cleaning, painting, extensive underwater repairs, engine room and boiler repairs: Amur. Making new propeller blade: Camosun. Docking, cleaning, painting, drawing tailshaft; Griffco. Welding: Restorer. Docking, cleaning, painting: Dredge John Lee and several scows.

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## General Trade Notes

The Radio Corporation has opened a district sales office at 10 South LaSalle street and a warehouse at Unit B, central manufacturing district, Chicago, Illinois.

The Electric Furnace Construction Company, 908 Chestnut Street, Philadelphia, manufacturers of electric furnaces, "Electro" steam boilers, etc., announces an increase in capital and the appointment of the following officers and directors: president, Frank Hodson; vice-president and treasurer, P. H. Falter; vice-president and counsel, Arthur G. Dickson, of Dickson, Beitler & McCouch, Philadelphia; new directors: John Gilbert, of Madeira, Hill & Company; William A. Webb, president Empire Coal Mining Company, and Dr. T. H. Weisenburg.

The new vice-president and treasurer, P. H. Falter, a graduate of the engineering department of the University of Michigan, was for thirteen years with the Aluminum Company of America in various capacities, and at different periods of his career has been general manager of the Baltimore Electric Alloys Company, general manager of the Shawinigan Electro Metals Company, Montreal, and until recently vice-president and general manager of the Canadian Electro Products Company, Shawinigan Falls, Quebec.

* * *

The Brunswick Refrigerating Company, Kroeschell Bros. Company, and Kroeschell Bros. Ice Machine Company have announced the incorporation of the Brunswick-Kroeschell Company, consolidating the three companies named. The present offices and factories in New Brunswick and Chicago will be maintained and all facilities and personnel combined toward the rendering of most efficient service.

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After conferences held between the Shipping Board and committees representing the Masters, Mates and Pilots' Association and the Neptune Association and a committee representing the Marine Engineers' Beneficial Association, an agreement was reached whereby existing wages and working conditions on cargo vessels shall be maintained for a period of six months from June 30 and thereafter until such time as either party shall have given thirty days' notice. June 30 was the date of expiration of the previous arrangement. The wages adopted are approximately the same as the published scale of the American Steamship Owners' Association covering privately owned vessels.

1828 **MOTT** 1922

Plumbing for the Small Boat

Mott Marine Plumbing includes, not only complete equipment for the latest type of ocean liner, but also a complete line of specially designed fixtures for the small boat, where quality must be combined with lightness and size.

The little "Norse" closet here shown is giving satisfactory service in numberless small craft. Write for the complete Mott Marine Catalogue.

THE J. L. MOTT IRON WORKS
GENERAL OFFICES AND PLANT,
TRENTON, N. J.
New York, Philadelphia, Washington, Boston
and all principal cities

**PROPELLERS**
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*Manganese Bronze*

A 17′ diameter Bronze Propeller made by us

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MARINE AND STATIONARY BOILERS
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916 Rogers Bldg.,
Vancouver, B. C.

# IN THE SHIPPING WORLD

In order that A. F. Haines, vice-president and general manager of the Pacific Steamship Company, may devote his entire attention to the Oriental business of the company, R. Stanley Dollar of San Francisco will assume charge of the Admiral Line's coastwise and intercoastal services. As operating executive of the line, Mr. Haines has had entire control of all of its activities, but the Oriental business has increased so greatly that it is necessary that he devote himself to it exclusively. It is in this service that the Pacific Steamship Company has to meet the competition of foreign lines. R. Stanley Dollar, who has been first vice-president of the Admiral Line for several years, is a partner in the Robert Dollar Company of San Francisco. He will assist H. F. Alexander, president of the company, who from now on will spend most of his time in Seattle and Tacoma.

* * *

The Trans-Oceanic Company have announced the inauguration of a new freight service from the Pacific Coast to the United Kingdom and Scandinavia. The steamers to be operated were secured through the chartering department of the General Steamship Corporation. They are: the Brielle, a modern Dutch freighter of 9000 tons carrying capacity; the Kristiania Fjord, a Norwegian craft of 8000 tons carrying capacity; and the Frogner, British-built but of Norwegian registry, 8100 tons carrying capacity. According to plans announced, the Brielle was to load in San Francisco late in July or early in August, the Kristiania Fjord about the end of August or early September, to be followed about the middle or end of September by the Frogner.

* * *

Announcement of the initiation of a Hawaiian-San Francisco-European service has been made by the East Asiatic Company. The number of ships to be operated in this service has not been decided upon. The first vessel on the run, the steamer Bolivia, especially fitted to handle perishable fruits, was scheduled to sail from the Hawaiian Islands late in July for Liverpool, London, Hull, Newcastle and Copenhagen via San Francisco. If the company finds the Hawaiian freight offerings heavy enough, some of its motorships, of which it maintains the largest fleet in the world, may be assigned to the run. The inauguration of this service will make possible the shipment of pineapples direct from Hawaii to Europe.

The Pacific Mail Steamship Company has been awarded two more of the Shipping Board 535's, the President Pierce and the President Taft, formerly the Peninsular State and the Lone Star State. This assignment will give the company a fleet of five steamers of this type, and will enable it to inaugurate a bimonthly service out of San Francisco to the Orient via Honolulu. Upon the recommendation of the Pacific Mail the board recently withdrew the 502-type steamers President Hayes and President Harrison, which had been operating out of San Francisco to Manila and Hongkong. The new vessels are expected early in August.

* * *

The Luckenbach Steamship Company has opened an office in Cleveland, Ohio, with O. F. Banghman in charge as manager for the district under the jurisdiction of that branch. The company already has established offices at Buffalo, Pittsburgh, Chicago and St. Louis.

* * *

Regular sailings to ports on the West Coast of Mexico approximately every week and to Gulf of California and Central American ports as far south as Corinto approximately every two weeks have been inaugurated by the Mexican States Line.

* * *

The steamer Harvard made a record for a fast voyage when in June she ran the 347 miles from Mile Rock in San Francisco Bay to Point Fermin in San Pedro harbor in 16 hours and 34 minutes. This beats her own record made last summer, when she covered the distance in 16 hours and 42 minutes. Captain Randall Rogers, master of the vessel, stated that although the Harvard maintained an average of more than 24 knots she was not run at top speed at any time during the trip.

* * *

According to the report of the port warden for the first five months of this year, Seattle's waterborne commerce amounted to 1,845,693 tons, a gain of 378,860 tons, or more than 25 per cent, over the commerce for the same period of 1921, which totaled 1,466,833 tons. The cargo movement during this time represented 146.6 cargoes of 10,000 tons each, while for the five-month period of 1922 the movement covered 184.5 like cargoes, a gain of more than 37.

* * *

The longshoremen's strike at Portland, Oregon, which has been in effect since April 23, has been settled. Negotiations were carried on between a committee from the longshoremen's union and one representing the employers, and the following agreement, according to a statement issued by the Waterfront Employers' Union, has been ratified:

"A neutral hall will be obtained and be managed by a committee of three, consisting of one representative of the Waterfront Employers and one union and one non-union representative of longshore labor. All men desiring work on the waterfront will apply to the neutral hall for employment. The wage scale and working rules, as issued by the Waterfront Employers dated May 1, 1922, shall remain in effect until such time as conditions in competing ports justify a revision; and it is agreed that the basis of employment of union and non-union labor shall be that of efficiency and good citizenship."

It is assumed that the Shipping Board will act in conformity with the new arrangement.

* * *

Word comes from the East that the Luckenbach Steamship Company intends to enter the Australian and Rotterdam trades. This is the first move in the company's plans to operate freight services to all parts of the world. With the expiration of the Australian Trading with the Enemy Act in August will come the reentry of Germany into the Australian shipping trade, so that the Luckenbach company may expect to encounter strong competition from both German and British vessels in Australian waters.

* * *

A contract for carrying 50,000 tons of coal from Kyushu to Manila has been awarded the Mitsui Bussan Kaisha. The coal will be used by American transports plying between Manila and American ports. Shipments were to begin in June and will continue until March, 1923. The contract, which is let each year, was received by the same company last year.

* * *

Shipments of lumber through the Panama Canal during the month of April were greater than for any month since December, 1920, and amounted to 102,194 tons, says the Panama Canal Record. Of the total, 4641 tons came from the West Coast of Canada and 97,553 tons from the West Coast of the United States. The destination of the lumber was 87,943 tons to the East Coast of the United States, 3860 tons to Great Britain, 2573 tons to other European

**(Continued on page 30, Adv. Sec.)**

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means that your ship is protected to the fullest extent that can be afforded by any chain cable.

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Write for information.

THE NATIONAL MALLEABLE CASTINGS CO.
CLEVELAND, OHIO

5-106

**(Continued from page 494 Ed. Sec.)**

ports; 4581 tons to South Africa, 1708 tons to the East Coast of South America, and 1529 tons to Mexico. Total shipments during the preceding six months, from Pacific to Atlantic, were October, 56,606 tons; November, 50,564; December, 42,610; January, 57,347; February, 64,002; and March, 74,432 tons.

* * *

Shipments of nitrate from Chile through the Canal showed a sudden rise in April, and exceeded shipments during any month since April, 1921. From an average of approximately 40,000 tons a month for the period since April of last year (in which the largest quantity for a month was 59,957 tons, in December and the lowest 22,231 tons, in March, 1922), shipments rose to 79,325 tons in April, 1922. Nitrate shipments during the fiscal year ending June 30, 1921, aggregated 1,530,592 tons and made up the principal cargo passing through the Canal. During the first ten months of the current fiscal year the nitrates have aggregated 417,188 tons.

* * *

Increased shipments of barley from the West Coast of the United States to Great Britain and the continent of Europe during the coming twelve months are predicted by some of the grain dealers and shipping men of the West Coast. During the ten months of the current fiscal year ending April 30, the shipments of barley from the West Coast of the United States passing through the Panama Canal aggregated 340,513 tons, an average of 34,051 tons a month. The month in which the greatest quantity passed through the Canal from the West Coast of the United States was August, with 99,129 tons.

* * *

The steamer Bethore, arriving at Balboa in the morning of May 29 and making the transit of the canal on the same day, reported a cargo of 19,000 tons, the largest to have passed through the canal on any ship to date. The previous record was 15,753 tons, carried by the steamship Orca of the Pacific Steam Navigation Company. The cargo of the Bethore was iron ore, shipped from Cruz Grande, Chile, to New York. The ship is owned and operated by the Ore Steamship Corporation. She is 550 feet in length by 72 feet beam, of 14,900 gross and 9615 net tons. At the time of passing through the canal on May 29 she was drawing 32 feet 6 inches of water.

* * *

The claims commission of the United States Shipping Board has docketed a total number of 1202 claims, amounting to $173,024,387.37. Of these 734 have been acted upon by the commission, voided, or otherwise disposed of, in amount $43,699,856.28.

# The Charter Markets

## Beyfuss Freight Report

San Francisco, July 7, 1922.

Since our report of June 12 the market for

Grain to Europe has again been quite active, nearly a dozen steamers having been reported chartered for wheat and barley. The wheat fixtures have been ruling on a basis of 37/6 U. K. or Continent and most of the steamers appear to be fixed for August/September loading. Liners are quoted 37/6 for space for wheat and we understand a good many parcels have been booked at this rate, although a few have been taken at less. Another steamer has been chartered for barley, practically spot loading, at the reported rate of 35/- to 36/3. Barley space in liners is holding for 40/- U. K., Continent basis, but in the last three weeks very little booking has been done, principally because the market on the other side for barley has been quite inactive.

Lumber to the Orient: There has been no change worth speaking of since our last report and this trade is very quiet, with rates ruling about $9 to $10 per M.

Lumber to West Coast of South America: In this trade two sailing vessels have been fixed, but on private terms. In this direction steamers in the regular service are still quoting $18.

Lumber to Australia: Two Japanese steamers have been reported for full cargoes of lumber in this direction, but the rates are still private, and to these ports the regular line steamers are quoting $14 per M.

Lumber to Africa: Still another large sailing vessel will take a full cargo to Cape Town/Delagoa Bay range, the rate being reported the same as on previous fixtures, namely, $22.50 per M.

Nitrate: A British vessel is spoken of as having been closed at about $6 per ton to take 6000 tons of nitrate to the Hawaiian Islands.

C. BEYFUSS COMPANY.

## Page Freight Report

San Francisco, July 7, 1922.

Since our last report under date of June 12 there has been no change in grain space rates by the regular liners to the U. K. and Continent, namely, 40/- per ton. In full cargo lots from the North the following steamers are reported as taken: Welsh City, 36/3, charterers not named; a Japanese steamer for the same business at 37/6 by Gray, Rosenbaum & Company; a Japanese steamer taken by the Northwest Wheat Growers' Association and another by the Northern Grain & Warehouse Company for the same business at the same rate. The latter have also taken the British steamers Koranton, at 35/-, and Scranton, at 35/-, as also a Japanese steamer for barley from San Francisco at 37/-. The Texas Maru was chartered by Balfour, Guthrie & Company at 38/3 for July loading, also for barley.

The lack of business in lumber chartering continues. J. J. Moore & Company chartered the Japanese steamers Neigen Maru and Azumasan Maru to take lumber from the North Pacific to Australian ports, terms private. For lumber for the West Coast the schooner Annie M. Campbell has been taken by G. Amsinck & Company at a rate of $16 per thousand feet, and the schooner William Taylor, also for Callao, by W. L. Comyn & Company, terms private.

The barkentine Monterey was chartered by Balfour, Guthrie & Company to take lumber from the North Pacific to two ports South Africa at $22.50 per thousand feet. The British steamer Sheafmead is taken for nitrate from Chile to three ports Hawaiian Islands, namely, Honolulu and Kahului and Port Allen, at a rate of $7 per ton. James Rolph & Company have taken the steamer West Islip to load coal from Newcastle, Australia, to San Francisco at a rate of $3.25 per ton, the charter also carrying Hawaiian Islands option. The same charterers have taken the Devon City for coal from Cardiff to San Francisco at $3 per ton, and the Great City is taken from Cardiff for the same business and at the same rate by Messrs. J. J. Moore & Company, the latter also having taken the Anten for coal from Newcastle, Australia, to San Francisco at $3 per ton, and W. L. Comyn & Company have chartered the Orient City and Baranga from Cardiff to San Francisco at $3 a ton.

The E. K. Wood Lumber Company report having bought the steel steamer Lakeshore, now on the Atlantic side to be brought to this coast to enter their coastwise lumber trade. Her lumber capacity is estimated at 1750 thousand feet.

PAGE BROTHERS, Brokers.

# ABOUT PEOPLE

**Captain J. J. Meaney,** formerly head of the Shipowners' Service Bureau, San Pedro, has been appointed master of the freighter Eastern Sailor, one of the latest additions to the Luckenbach fleet.

**William H. Woodin,** president of the American Car & Foundry Company of Wilmington, Delaware, has been elected to the directorate of the American Ship & Commerce Corporation.

**T. H. Lachelt,** who has been the Admiral Line ticket agent at Portland for the past two years, is planning to remove to San Francisco, where he will take up new work.

**Commander R. C. Brennan,** formerly port captain, has been made superintendent of the Admiral Line. The position of port captain, coastwise department, will be filled by **Captain E. L. McNoble,** and that of port captain for the foreign department by **Captain H. C. Hansen.**

**F. H. Knickerbocker** has been appointed general manager of the Alaska Steamship Company and also of the Copper River & Northwestern Railroad, with headquarters at Pier 2, Seattle. Mr. Knickerbocker is regarded as one of the most experienced transportation men in the West, having served twenty-five years in the Union Pacific system. For the last six years he has been general superintendent of the Oregon Short Line.

**Captain L. A. Waters** has retired from the sea after a service of twenty-three years and opened an office in San Pedro as marine surveyor.

**Captain S. Sandberg,** for the past five years marine superintendent for the Luckenbach Steamship Company at New York, has been appointed traffic manager of Los Angeles harbor, succeeding Captain Inar A. Pedersen, resigned. Captain Sandberg is well known in transportation circles and has a wide knowledge of traffic conditions. Under present plans he will handle all matters pertaining to the physical operation of the port facilities, while George Southwick, who has been acting traffic manager, will have charge of all rate matters, in connection with his duties as superintendent of the municipal belt line railroad.

**Frank Waterhouse,** president of the Seattle Chamber of Commerce, has been appointed by Secretary of Commerce Hoover to act on an advisory committee that will give counsel and advice to the Far Eastern Division of the Bureau of Foreign and Domestic Commerce on major problems relative to the promotion of American commerce. These include the improvement of the Far Eastern cable service and the location at Shanghai or Peking of the bureau's principal office, with the commercial attache for China.

Zac T. George, assistant Pacific Coast general manager of the Luckenbach Steamship Company.

**John C. Settle** has been placed in charge of the Portland office of the General Steamship Corporation.

**R. Stanley Dollar** of San Francisco, vice-president of the Pacific Steamship Company, has removed to Seattle and taken charge of the coastwise and intercoastal business of the company. This will make it possible for **A. F. Haines,** general manager and also vice-president, who has been directing these services, to devote his entire time to the trans-Pacific and Asiatic operations of the Admiral Line.

**Captain H. Nielsen,** in the service of Hind, Rolph & Company for many years, has retired from active sea service. A sailing master of the old school, he is credited with having had fewer mishaps than any old-time master on the Pacific. Captain Nielsen was for many years commander of the barkentine Makaweli, now stationed in Oakland creek.

**Meyer Lissner** and **Rear Admiral William S. Benson** have been reappointed by President Harding to the Shipping Board for additional terms of six years. Their terms expired June 13.

At the annual meeting of the Port of Portland Commission the following officers were re-elected: **Frank M. Warren,** president; **Colonel George H. Kelly,** vice-president; **J. D. Kenworthy,** secretary; **Phil Metschan,** treasurer. All standing committees were reappointed.

**J. M. Hickey,** for the last nineteen years connected with William H. Thornley, customs broker, has opened offices at 510 Battery street, where he will engage in the same line of business. Mr. Hickey is also a lawyer, and his long experience in the customs brokerage and shipping business, combined with his knowledge of the law, should make his services extremely valuable to ship operators and others interested in kindred lines. The concern will be known as J. M. Hickey & Company.

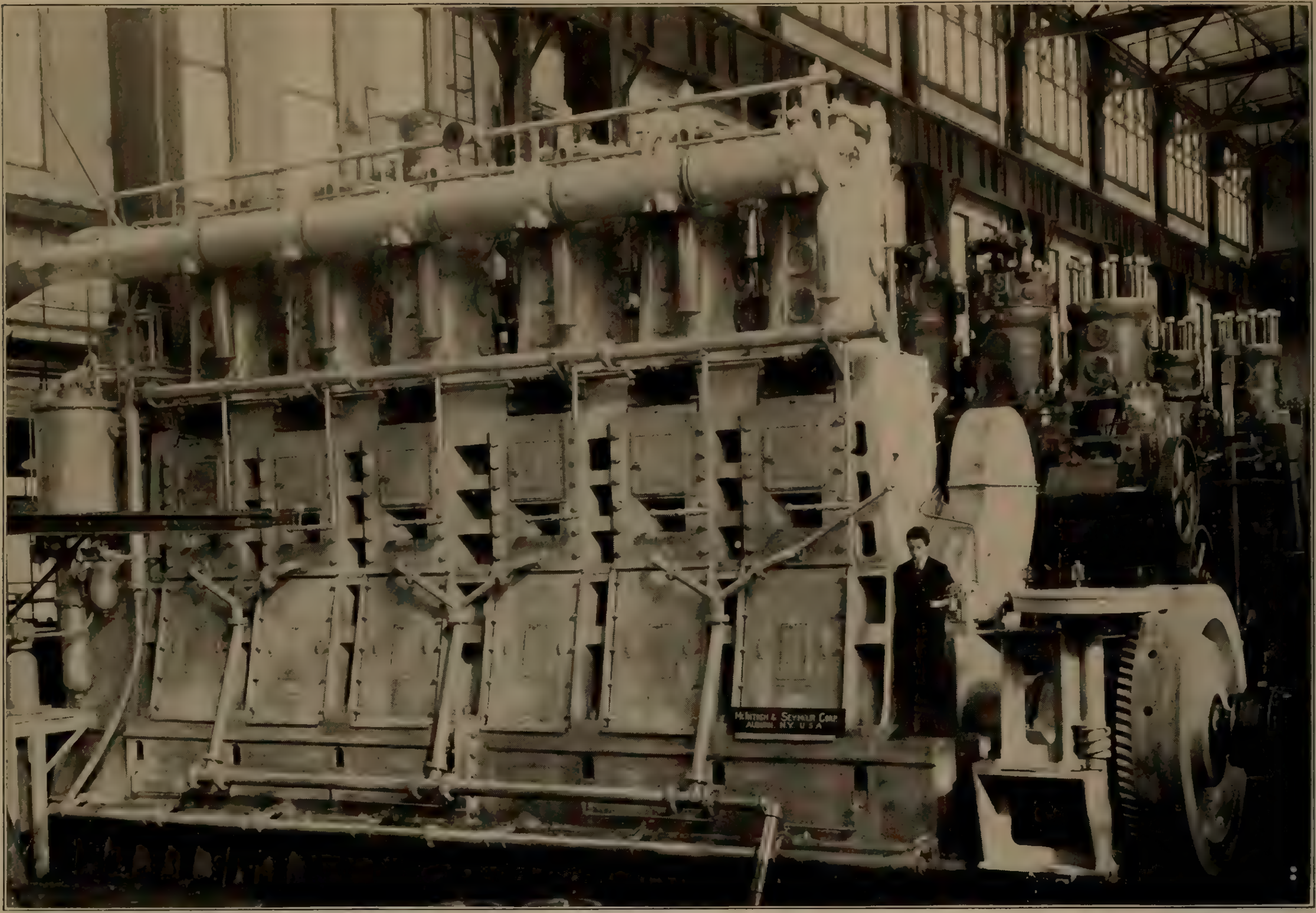
The Westinghouse Electric & Manufacturing Company announces the following changes in staff organization: **L. C. Bullington** has been promoted from assistant to the manager of the power department at East Pittsburgh, Pennsylvania, to assistant manager in charge of the general work of that department. **Charles F. Lloyd** has been advanced from manager of the substation section to manager of the electric division, and **R. E. Carothers** from manager of the turbine section to manager of the steam division. **Bruce H. Lytle** and **D. O. Tylee,** respectively, succeed Mr. Lloyd and Mr. Carothers. **P. Mathison** has been assigned to the San Francisco district as switchboard specialist.

**Keijiro Hori,** president of the Osaka Shosen Kaisha, has been reelected chairman of the Shipowners' Union of Japan.

**Henry J. Miller** has been made president of the Lake Torpedo Boat Company, Bridgeport, Connecticut, vice his brother, Herbert L. Miller, deceased.

**John Nicolson** has resigned as director of the division of field information of the Shipping Board. He has been assigned to the board's bureau of law in connection with the scrutiny of foreign and United States laws affecting shipping, investigations and hearings, and legal advice and litigations. His successor has not been appointed, the work being carried on by R. T. Merrill, director of the bureau of research.

**Edwin H. Duff,** of the American Steamship Owners' Association, was the guest of the Pacific American Steamship Association at a luncheon in San Francisco June 16.



The above picture shows one of our 1200 I. H. P. Directly Reversible Marine Engines on the test floor. A pair of these engines have been installed on the M/S "KENNECOTT."

**Other sizes available for Marine work, 390, 640, 1550, 2000 and 3000 I. H. P. all four cycle and directly reversible.**

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**HEAVY DUTY**

**McINTOSH & SEYMOUR CORPORATION**

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NEW YORK

412 BISBEE BLDG.
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815 SHELDON BLDG.
SAN FRANCISCO, CAL.

# Three Diesel Engine Tugs

THE success of the Nelseco Diesel engine in the logging industry of the Northwest Pacific Coast and the Alaskan fishing and mining industries has convinced the officials of the Transmarine Line that this type would be satisfactory and could be effectively used on the New York State Bridge Canal. Three tugboats are now building at Port Ewan on the Hudson River for delivery before the pening of the 1922 season on the canal. These tugs will be equipped with Nelseco Diesels; two tugs will employ units of 240 B. H. P., and one, slightly smaller, will be powered with an 180 B. H. P. engine.

The tug dimensions follow:

| | One | Two |
|---|---|---|
| Length overall | 60-ft. 0-in. | 67-ft. 6-in. |
| Beam overall | 17-ft. 6-in. | 17-ft. 6-in. |
| Draft | 7-ft. 6-in. | 7-ft. 6-in. |
| Nelseco engine | 180 S. H. P.<br>350 revs. | 240 S. H. P.<br>350 revs. |
| Propeller, bronze | 56-in. diam.<br>33-in. pitch | 61-in. diam.<br>36-in. pitch |
| Fuel oil tanks | 3500 gals. | 3500 gals. |

The Nelseco Diesel marine engine is built by the New London Ship & Engine Company of Groton, Connecticut. This concern is the pioneer oil engine and the largest strictly Diesel factory in America. Hundreds of the submarines of the United States and foreign navies have been equipped with the Nelseco Diesel, and it was the success attained in powering undersea craft that led to the company enlarging their activities by offering to the marine market commercial oil engines suited to harbor, coastwise and fishing craft in units from 120 horsepower up. Many nstallations, in service for en years, have made splenlid records for power, economy in fuel consumption and lependability in service.

**Advantage of Diesels**

The need for an efficient, lurable and yet economical init of power on the New ork State Bridge Canal is vident. Steam powered towoats are especially limited y the heavy consumption f coal, loss of time through e-coaling, and constant reairs. The Diesel engine's dvantage in fuel economy er unit of power developed is more than ten to one over steam in towboats. This statement is based upon actual accomplishments on the without destroying it what strength is definitely assured and safe to allow. An examination of the surface of welds does not reveal this. It is on this account that certain well known technical societies and associations interested in the possibilities of welding have greatly restricted the allowable application.

A thermit weld, however, by reason of its collar, is the only method which allows a careful inspection and permits the drawing of proper conclusions as to the strength of welds. In thermit welding it is impossible to have such defects as lack of fusion (if the proper amount of thermit has been used and instructions have been carefully followed), or oxide inclusions, such as those formed during the adding of metal in the case of other methods. Unclean surfaces, oxide inclusions (due, for example, to failure properly to clean scale from wrought iron sections before welding), have always resulted in thermit welding in only one type of defect., i. e., blowholes. This defect, due to the natural tendency of the gases to rise in the molten mass, if present at all, will always be present in the thermit steel collars, and an examination internally of the collar can be made without affecting the strength of the weld. Thus the unsound welds can be found and condemned.

In practice, this examination is made by gouging deep grooves in the thermit steel collars parallel with the axis of the piece, these grooves reaching almost to the original section itself. Two such grooves on the four sides of a thermit weld have been found to be sufficient. If these grooves are observed to be free and clean from blowhole defects, the inspector may be absolutely assured that the weld itself is sound.

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## TRADE LITERATURE

### Kingsbury Thrust Bearings —Catalog C of the Kingsbury Machine Works.

A very neat 70-page booklet describing the latest developments in Kingsbury thrust bearing. Of particular interest to machinery users will be the announced standardization of dimensions for this bearing and the fact that capacity, weights, and all necessary data are available in convenient form for engineers and designers. It will also be of interest to all users of these bearings that they are now sold under a very positive guarantee.

The booklet tells of many of the more important installations using Kingsbury thrusts, describes the determination of loss of power and the financial aspects of bearing losses, and gives special instructions for the installation and operation of the Kingsbury bearing.

**Fuel Consumption**

It is conservatively estimated that this Diesel-engined tug will operate on 15 per cent of the fuel expense of the steam tug. This statement is based upon actual operating cost of Diesel tugs compared with steam craft of one-half the horsepower.

The present canal towboats vary from 75 to 100 developed horsepower. The guaranteed strength of each large engine is 240 brake horsepower or approximately 250 per cent greater than the average canal towboat. The engine for the smaller boat is guaranteed at 180 b. h. p. This additional energy is expected to shorten the transit time between New York and Buffalo by 24 to 36 hours. The oil bunkers are so designed that one fueling will be sufficient for the round trip from Albany to Buffalo. This increase in speed is not obtained at a sacrifice of fuel. This economic speed in tugs of this type used for long towing on the Pacific Coast is 10 miles per hour light and 6 miles per hour with tow.

READ THIS TEST OF
MAGNOLIA
ANTIFRICTION
METAL
BY THE UNITED STATES GOVERNMENT

| Time in minutes | Temperature Fah'nheit | Pressure per sq. inch lb. | Revolutions | Speed of rubbing surfaces |
|---|---|---|---|---|
| 0 | 90 | 500 | 1550 | 2030 |
| 10 | 120 | 500 | 1550 | 2030 |
| 20 | 184 | 500 | 1550 | 2030 |
| 30 | 198 | 500 | 1550 | 2030 |
| 40 | 210 | 500 | 1550 | 2030 |
| 50 | 210 | 500 | 1550 | 2030 |
| 60 | 198 | 800 | 1550 | 1965 |
| 70 | 196 | 800 | 1550 | 1965 |
| 80 | 190 | 1000 | 1550 | 1965 |
| 90 | 186 | 1000 | 1550 | 1965 |

(From Annual Report of the Secretary of the Navy, 1888.)

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# Pacific Marine Review

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Pacific Marine Review, Vol. 19, No. 9. Published Monthly at San Francisco. Entered as second class matter at the post office at San Francisco under the Act of March 3, 1879. $3.00 a year.

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# Pacific Marine Review

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J. S. HINES
Publisher

A. J. DICKIE
Editor

ANDREW FARRELL
Associate Editor

B. N. De ROCHIE
Business Manager

PACIFIC MARINE REVIEW,
THE NATIONAL MAGAZINE OF SHIPPING
576 Sacramento Street, San Francisco

339 at No. 30 Church Street,
New York City

500 Citizens National Bank Building,
Los Angeles

Official organ of the Pacific American Steamship Association

Entered as second class mail matter June 20, 1913, at postoffice, San Francisco, under the act of March 3, 1879.

Subscription price, a year (domestic) ........ $2.00
(foreign) ........ 3.00
Single copies ........ .25

Published on the fifteenth of each month. Advertising forms close on the tenth and editorial forms on the twelfth.

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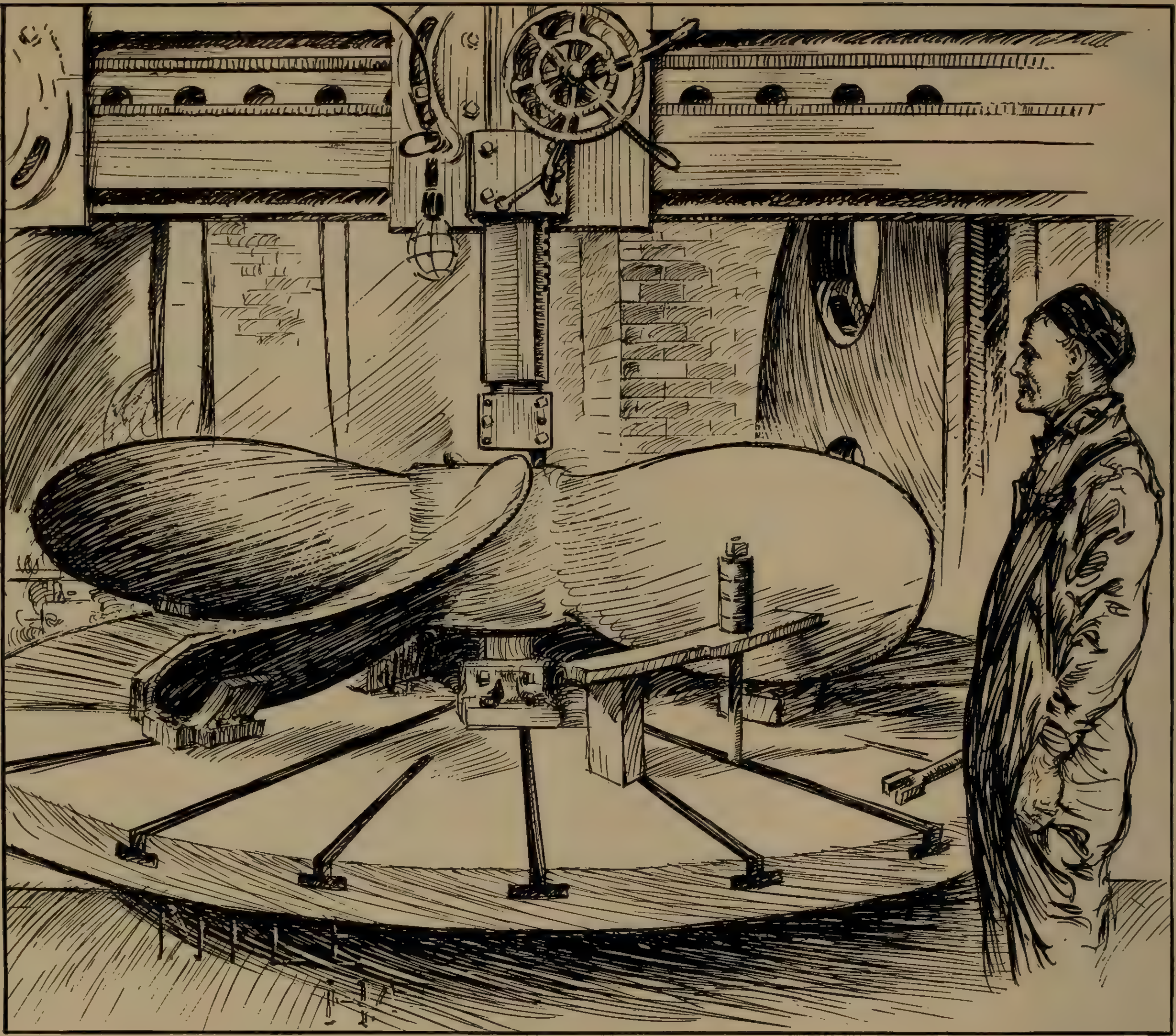

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# *Pacific Marine Review*

The National Magazine of Shipping

*September, 1922*

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## American Tonnage in Foreign Trade

ACCORDING to figures prepared by the research department of the Mercantile Trust Company of San Francisco, during the first four months of 1922 an average of 38 per cent of the total American tonnage cleared out of American ports in the foreign trade, sailing without cargo. The total during those months was 8,476,000 tons, of which 3,238,000 was in ballast. During the same period the foreign tonnage amounted to 9,283,000, of which only 1,018,000, or approximately 11 per cent, was in ballast.

During these same four months the total value of the sea-borne foreign trade of the United States, exports and imports, amounted to $1,906,000,000. Of this amount about 34 per cent, or $648,000,000, was carried by American vessels.

The total American tonnage in and out for those four months was 16,567,000, so that the average value carried to the ton was $39. During the same time, in and out tonnage of foreign vessels was 18,594,000, carrying $1,158,000,000, or better than $62 to the ton. That is to say that American ships are operating at the present time with what profit there may be on $39 worth of cargo for each ton cleared, while foreign ships are operating on what profit they can get out of $62 worth of cargo to each ton cleared, and that judged on this basis alone the foreign ship now has an operating advantage, other things being equal, of practically 59 per cent.

These figures show very plainly the kind of competition we are up against in operating ships in foreign trade, and the necessity for considerable government assistance if such operation is to continue.

If America's position on the seas is to be maintained, if the American people wish to keep their millions of tons of shipping busy working out profitable foreign trade routes and acting as commercial advance agents for American products in all ports of the world, it will be necessary for the American people to foot the bill.

If the American people want to relinquish their place on the seas and give over the foreign carrying trade to those who by reason of superior organization, lower cost and older connections can handle it more economically, then it is only a matter of cold-blooded business economy to scrap these millions of tons of shipping or sell them to foreign nationals who can use them.

## American Shipping in Intercoastal Trade

THE protected coastwise shipping of America, particularly the intercoastal carrying trade via the Panama Canal, is showing remarkable growth, and practically all of the conference lines are increasing their cargo carrying capacity. That they are warranted in this is shown by the statistics compiled by the Panama Canal Commission. These statistics show that in 1921 coast to coast cargoes were 850,000 tons greater than in 1920, and it must be borne in mind that this increase took place during a time of almost unprecedented international trade depression and shrinkage in the volume of ocean transportation. The commission, basing its judgment on the record of the first four months of 1922, would indicate that the tonnage increase of 1922 over 1921 will be much greater than that of 1921 over 1920. This increase is due very largely to the education of shippers and their increasing realization of the advantages of water transportation.

## Words and Work

WITH the revival of German shipping in the Far East, as reported by Consul General Harris of Singapore, the seas of the world begin to take on their pre-war appearance, although it doubtless will be many years before the German merchant flag waves in every port from Jaluit to Hull. But that Germany is recovering rapidly is attested not only by the re-establishment of trade routes but also, and perhaps more effectively, by the evident alarm of nations that entered the ocean lanes left vacant when German merchantmen fled to cover in neutral ports in 1914. Well may every nation in the world be alarmed, because the Germans realize that work is their only salvation, while that truth scarcely has begun to penetrate the minds of the late and in a manner of speaking allied nations.

Feverish denunciation of Germany, appeals to the dead of Flanders' fields, will avail nothing. If Germany can manufacture cheaper and transport cheaper Germany will command the world's markets. One great immediate advantage, that of exchange, does lie with German exporters, but this condition cannot be regarded as permanent, and sheer ability and persistence will operate more and more vigorously. Breath heretofore wasted in damning the Hun had better be saved for other and better purposes.

## The Marine Football

THEY have come, they have heard, they have gone away, have Commissioners Benson, Chamberlain and Lissner of the Shipping Board. In their departure, how much information regarding Section 28 did they bear with them in addition to what they possessed when they arrived? Have they discovered whether "adequate facilities" exist under the American flag? Or do they know, as they could not have known before, that commercial interests of the Pacific Coast are almost a unit in opposing enforcement, that shipping interests are divided?

Chairman Lasker's administration has given much evidence of ability to think in lines more or less straight; but the hearings on Section 28 go far toward destroying that favorable impression. If "adequate facilities" do not exist, the Shipping Board has power to create them; but the board manifests more concern in the effect of enforcement than in the one question that it is empowered to decide, whether, that is, sufficient American tonnage exists.

It is time that Section 28 was enforced or repealed. It should not be made a football any longer. The spectacle of the section being kicked about the field for two years does not inspire confidence in the government's merchant marine policy.

## Securities

A CIRCULAR received from the Shipping Board early in the month made public a list of notes and mortgages on which offers were invited from the investing public. We were immediately interested in the denominations of notes and the values of the securities because they reflect so eloquently the story of the decline in marine values during the last three years.

Such figures, for instance, as a million and a quarter dollars of notes bearing 5 per cent interest, secured by preferred mortgages on the steamship Blank of the Blank line, give us pause when upon looking up said steamer Blank we find her to be a standard Shipping Board freighter of 8800 tons deadweight capacity, delivered in the summer of 1919. A little research work shows that the present market value of such a freighter would be between $350,000 and $400,000, with very few bidders at either price.

To date, the Shipping Board has not made public any of the offers resultant on their invitation to bid on this list of notes. The amount of the notes, based on the value of the security at the time the notes were issued, would indicate very poor banking practice had these notes been issued by banks. This, however, cannot be held against the Shipping Board, as at that time the market value was commensurate with these figures, and the Shipping Board was under orders to sell on easy terms.

The figures are an added force to the contention of the Blank line et al. that the Shipping Board should reduce the amounts of these notes to conform more nearly with the present market value of the securities. Perhaps the quickest and best method of accomplishing this condition will be through these public sales in which, of course, the Blank line et al. may participate.

## The C. G. M. M. Report

IT is encouraging to observe that the vessels of the United States Shipping Board are not the sole government-owned fleet losing money these days. There is, for example, that of the Canadian Government Merchant Marine, the 1921 report of which was made public a few weeks ago. In operating 65 vessels of 380,097 deadweight tons, the line sustained a deficit of $2,210,724, or approximately $5.80 to the ton. Large as this amount may appear to be, it is only a little more than half the loss of the United States Shipping Board, which would sustain a deficit of $10.68 to the ton even if it succeeded in operating its fleet for an entire year at a loss to the ton of 89 cents, which was the February showing.

Little would be gained, however, in attempting to compare the losses of the Canadian and United States government-owned fleets. Conditions and methods of bookkeeping differ. The point to be made is that both nations incurred deficits. But while the United States Shipping Board earnestly desires to sell its ships, no sign of withdrawing is visible in the C. G. M. M. report, even though the directors recommend that smaller vessels be sold, only 37 being retained. The following paragraph of the report casts some light on the situation: "While the operations of the company have resulted in a loss for the year, the advantage which the company's fleet has been to the Canadian National Railways and to Canadian trade generally should be considered. Large shipments which have been handled by the Merchant Marine at the low rates prevailing have provided tariff return to the National Railways. Much business of this character would have been handled through foreign ports and by other or foreign railways if the company's vessels had not been available. . . ."

North of the boundary a government railway system and a government fleet; south of the boundary a bitter opposition to any government operation of railways and a desire to see the government withdraw from shipping. There are few more striking contrasts in the business world of today.

## Training Diesel Engineers

A RECENT letter from an engineer correspondent in New York renews our interest in a phase of American marine engineering which has often occupied our thought. This letter tells of the difficulties met at the opening of the war in trying to get American diesel engineers with sea experience. Of the many applicants answering an advertisement not one was qualified to take charge, although plenty of them had chief engineers' tickets. The writer goes on to say, "I am a firm believer that the first class chief engineer of a steamship, one who has proved his value to the owners by years of economical service, is the man to become a first class chief engineer of motorships, if given the opportunity to become acquainted with the practical and also the theoretical details of internal combustion engines."

Practically all European diesel engineers in the first motorships were old steam engineers who had been placed in the machine shops where the diesel engines were being built. "As a matter of policy no man should be allowed to sail as chief engineer on any motorship who has not first been employed as an erecter in the shops where the machinery is being built, and who has not had the opportunity to follow that machinery" from the drawing room, through the forge, foundry and machine shop, across the testing floor to the engine room of the ship. But even after this practical experience "something more is needed, and that is technical theoretical knowledge. I fail to see how any man can hope to get the best results from such a scientific prime mover as the diesel engine, who is not acquainted with the fundamentals of thermodynamics."

The training of diesel engineers should be earnestly considered by all of the organizations of marine operating engineers. It should also be the subject of study by the United States Steamboat Inspection Service, the American Bureau of Shipping, and the university extension courses in all of our coastwise districts. As a matter of fact, we ourselves have been doing considerable work in the way of pressing the importance of training diesel engineers upon these various bodies, and we know that it is receiving serious consideration from many if not all of them.

American firms are now operating a number of ocean-going motorships with American personnel in the engine room with complete success, and American builders of diesel engines are in a position to provide competent guarantee engineers and to give efficient instruction to the prospective diesel engineers of all grades that future orders of motorships may send to their shops.

In the meantime, candidates for engineers' tickets should use every opportunity to thoroughly acquaint themselves with the theory and practice of diesel marine propulsion.

## "Mailed Fist" Rantings

SUCH attacks by British publications on an American shipping subsidy as have been brought to the country's attention by the Mississippi Valley Association and Senator Ransdell are unworthy of the country from which they come. They are abysmally stupid. They display precisely the same degree of intelligence as did the late and unlamented Kaiser's tactful references to the "mailed fist" and "shining armor", which as everyone knows did so much to foster good will between Britain and Germany. One need say nothing regarding the truth or falsity of the articles published in the Liverpool Courier and in other newspapers; they are manifestly spawned of the same venom that of late has been denying to the United States any share in winning the war. But one may speak at considerable length of the good taste, the sound sense, displayed by the publications responsible. Threats of retaliation, veiled or open; hints of war and all the other ravings are not likely to terrify the people of the United States. It is most unfortunate for the continuance of Anglo-American good will that the words of the Washington correspondent of the London Times are not taken to heart by Britons at home and in the United States: "Congress and the country generally are perhaps inclined to be supersensitive on the subject of foreign propaganda just now, and any interests who might think it desirable to follow the German example will unquestionably be defeating the object they seek to attain." Perhaps, on the other hand, the last clause indicates the positive good that will flow from British attacks: a consolidation of pro-subsidy sentiment in this country.

## Through Japanese Eyes

YONEJIRO ITO, president of the Nippon Yusen Kaisha, in an address delivered at the recent semi-annual meeting of the company, gave it as his opinion that world shipping would not become "normal" for two or three years. No one need be downcast that good times are so far distant; rather, there is cause for optimism in that an operator of Mr. Ito's standing, experience and ability should believe that the end of depression is so near.

"From two to three years more will be required before the world's shipping interests will be able to regain their normal state after being severely shaken by the damaging economic effects as a result of the great war," said he. "Japanese shipping lines are now experiencing the worst depression that they have ever encountered, and although the outlook at present is not as bright as is desired all of the companies are curtailing expense in every possible way, and I feel assured that all of them will, in the course of a few years, be back on a basis which will permit of legitimate profits and which will supply a demand for practically all of the ships which are now experiencing difficulty in getting cargo or lying in local harbors idle. Although the Nippon Yusen Kaisha has experienced its full share of the depression, the company is gradually regulating its affairs in such a way that will permit of operation of its ships, and we are now looking forward to the end of the present depression."

## Panama Traffic for Fiscal Year

FINAL summaries of the traffic through the Panama Canal for the fiscal year ending June 30, 1922, have not been completed. Subject to minor corrections, however, the summaries for the past fiscal year as compared with the fiscal years of 1921 and 1920 are as follows:

| | 1922 | 1921 | 1920 |
|---|---|---|---|
| Number of vessels | 2,736 | 2,892 | 2,478 |
| Net tonnage, P. C. measurement | 11,417,459 | 11,415,876 | 8,546,044 |
| Tolls (exc. of launches, etc.) | $11,197,832.41 | $11,276,889.91 | $8,513,933.15 |
| Tons of cargo | *10,873,000 | 11,599,214 | 9,374,499 |

* Approximate figure.

On the basis of the figures as above, the number of ships in the fiscal year just ended was 156 less than in the preceding year, a decrease of 5.4 per cent. Net tonnage was slightly greater, and tolls $79,057.50 less, a decrease of seven-tenths of 1 per cent. The approximate figure for cargo indicates a decrease of about 725,000 tons, or about 6 per cent. The fiscal year 1921 was the year of greatest traffic through the canal so far.

In the calendar year 1921 the number of commercial ships making the transit was 2783. Net tonnage and tolls (11,435,811 tons and $11,261,098 in tolls) were about the same as in the fiscal year just ended; and cargo, 10,707,005 tons, was less than the indicated total for the fiscal year 1922 by about 165,000 tons. The traffic for the fiscal year was, accordingly, at about the same rate as in the last calendar year.

## Bargains in Diesels

W. P. WILLETTS, assistant to the manager, material sales division, U. S. S. B., has a word of interest to shipowners. In behalf of the board he is offering Skandia (Pacific Diesel) Werkspoor diesel engines of 825 I. H. P. for $25,000 each or for $24,000 each in lots of two or more, terms cash. These prices are approximately one-fourth of the cost and one-third the present cost, so that real bargains are being offered. Of ten engines held in the Alameda, California, warehouse, three have been sold, two of which went to the Standard Oil Company of California for installation in Barge 95 and one to the Federal Light & Traction Company of New York. Those interested should communicate with Mr. Willetts at the Alameda warehouse.

# SEA TRIALS OF MOTORSHIP MISSOURIAN

By J. C. SHAW*

ON July 6 the motorship Missourian, which is a sister ship of the motorship Californian, of which a detailed description will be found in Pacific Marine Review for January and March, ran her builder's trial on the Delaware. She returned to the yard of the Cramp Company the same day for completion before being turned over to her owners.

The owners were in a special hurry to have the vessel, which limited the time available for dock and preliminary trials, as they were desirous of putting her on the regular sailing date, scheduled for the 15th, leaving Boston. This haste was caused by a recent decision to lay up for repairs two of their steamers that were being employed in the combined coastwise and continental service.

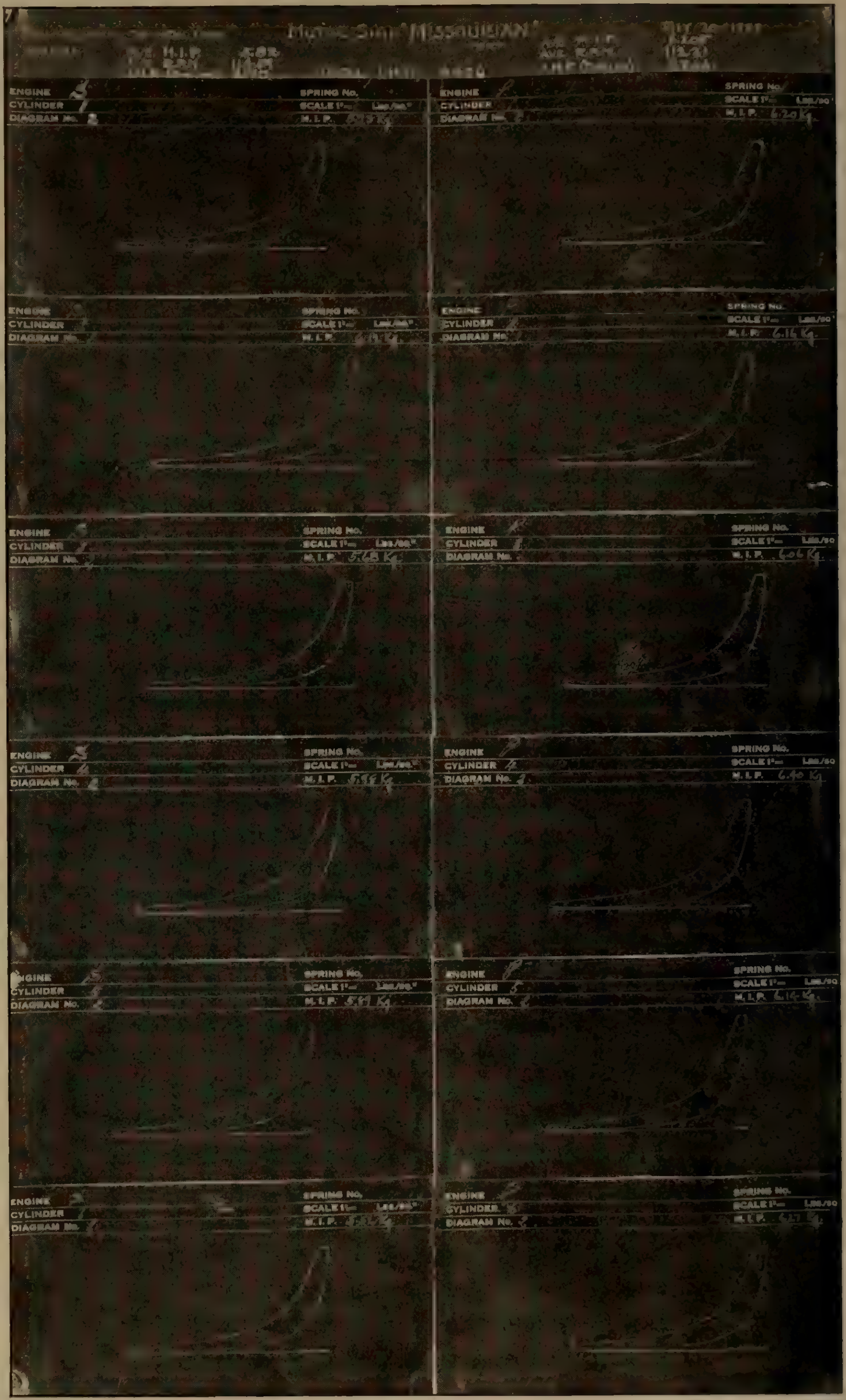
The engine builder's preliminary trial accordingly consisted of a six-hour run down the Delaware and back, or a total of 12 hours. During this preliminary trial revolutions and cards were taken over a six-hours' continuous run.

The oil consumption trials were run in the open sea, on the way to New York, and when running between various ports for loading.

### Preliminary Trials

The results of a six-hour period of preliminary trial are as follows:

| | |
|---|---|
| R.P.M. Starboard engine | 116.65 |
| R.P.M. Port engine | 114.45 |
| R.P.M. Mean, both engines | 115.55 |
| M.I.P. KgCm$^2$ stbd. engine | 5.86 |
| M.I.P. KgCm$^2$ port engine | 6.06 |
| I.H.P. (Eng.) stbd. engine | 2221 |
| I.H.P. (Eng.) port engine | 2258 |
| I.H.P. Both engines | 4479 |



Cards taken during the sea trial of the motorship Missourian

The shallow water, in combination with the drag of the vessel due to the trim aft, had the effect of simulating loaded conditions, as it will be noted that the engines on an average developed approximately their rated power at normal revolutions, which is 4500 I. H. P. at 115 R. P. M. At the turn, where the water was deeper, however, the revolutions and corresponding power were considerably above the mean values, though the control levers on the engines were not altered. The draft on trial, taken in fresh water and with the inner bottom oil tanks filled with oil and the peak tanks partly filled with water, was 8 feet 1 inch forward and 17 feet 9 inches aft, or a mean of 12 feet 11 inches, corresponding to 6579 tons displacement.

On July 10 the Missourian left the Cramp Company's yard for New York to dock for painting of bottom, and on the 12th proceeded to Boston for commencement of loading, where about 700 tons of cargo was put aboard. She then went for additional cargo directly to Philadelphia, where about 3000 tons was taken on, afterwards returning to New York for finishing of loading. From the last mentioned place she finally sailed on the 23rd of July for the Pacific Coast. Much fog was encountered on the way to and from Boston, when rounding the New England Coast, necessitating slow-

---

* Assistant chief engineer, William Cramp & Sons Ship & Engine Building Company.

Motorship Missourian leaving the dock at Cramp's shipyard, Philadelphia, for New York

ing down at times and taking the longer outside passage via Nantucket Light. The average speed, however, on the way up to Boston from Ambrose to Boston Light was 12.97 knots, and on the return from Boston Light to Overfalls (or entrance to Delaware Bay), 12.89 knots.

### Sea Trials July, 1922

| Date of Trials | 7/10, 11 | 7/12, 13 | 7/15,16,17 | 7/20/22 | 7/24-7/25 |
|---|---|---|---|---|---|
| Run between and | Phila.-<br>New York | New York<br>Boston | Boston<br>Phila. | Phila.-<br>New York | New York<br>Panama |
| Draft forward | 9′ 4″ | 7′ 3″ | 10′ 0″ | 13′ 5″ | |
| Draft aft | 16′ 2″ | 18′ 2″ | 17′ 8″ | 23′ 10″ | |
| Draft mean | 12′ 9″ | 12′ 8½″ | 13′ 10″ | 18′ 7″ | 23′ 1″ |
| Displacement | 6705 | 6678 | 7347 | 10,213 | 13,000 |
| Consumpton test duration | 3 hrs. | 2 hrs. | 10 hrs. | 5 hrs. | 24 hrs. |
| R.P.M. stbd. engine | 121.64 | 124 | 121.91 | 114.59 | |
| R.P.M. port engine | 118.63 | 121.96 | 119.90 | 112.21 | |
| R.P.M. mean | 120.9 | 122.98 | 120.90 | 113.40 | 114 |
| M. I. P. KgCm2 stbd. engine | 6.54 | 6.15 | 6.18 | 5.82 | |
| M. I. P. KgCm2 port engine | 6.26 | 6.07 | 6.02 | 6.20 | |
| M. I. P. KgCm2 mean | 6.40 | 6.11 | 6.10 | 6.01 | 5.99 |
| I.H.P. (Eng.) stbd. | 2588 | 2477 | 2450 | 2170 | |
| I.H.P. (Eng.) port. | 2415 | 2410 | 2347 | 2266 | |
| I.H.P. two engines. | 5003 | 4887 | 4797 | 4436 | 4440 |
| Oil per I.H.P., main engs., all purp's. | .309 | .312 | .304 | .306 | .307 |
| Oil per hr., lbs., all purposes | 1545 | 1525 | 1459 | 1357 | 1363 |
| Speed trial measured betw. and | NE Light<br>Ambrose | Ambrose<br>Fire Is. | Nantucket<br>NE Light | Overfalls<br>Ambrose | |
| Knots | 12.45 | 13.93 | 13.27 | 12.42 | |
| R.P.M. stbd. eng. | ..... | 120.84 | ..... | 113.89 | |
| R.P.M. port eng. | ..... | 121.20 | ..... | 111.70 | |
| R.P.M. mean | 115.3 | 121.02 | 121. | 112.8 | |
| Slip per cent | 6.8 | .8 | 6.4 | 5. | |

### Full Consumption Tests

The first four columns in the accompanying table show the summary of the results obtained between the different ports before leaving for the West Coast. The data in the last column was obtained by radio on the second day out, after leaving New York for the Panama Canal. From these figures it will be noted that the total oil consumption per i. h. p., main engines only, is very consistent, and checks quite closely the results obtained with the motorship Californian previously published in Pacific Marine Review for July.

The set of cards shown was obtained on the final run from Philadelphia to New York, when partly loaded. The only adjustment affecting the character of the cards that had been made to the engines since erection of the vessel was a slight advance of the fuel cam throws on cylinders Nos. 2 and 4 of port engine. It will be noted that the mean indicated pressures of the various cylinders had not yet been equalized. Adjustments for this purpose are to be carried out after leaving New York by the Cramp Company's guarantee engineer, Mr. O. Mattsson, who accompanies the vessel on the first voyage.

The engines were remarkably free from vibrations at all times, although the vessel was in light condition, and the revolutions of the propellers at times considerably exceeded the designed revolutions of the engines.

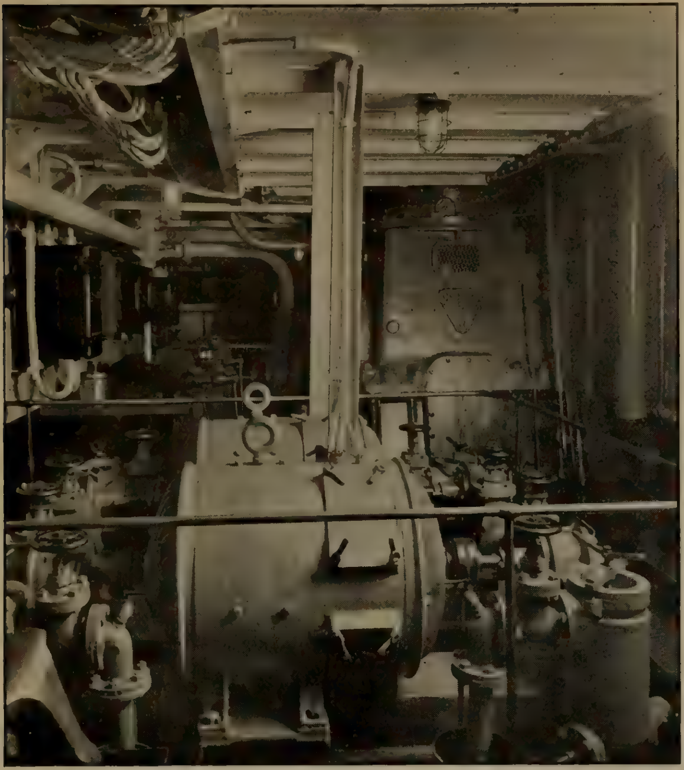
### Fuel Oil Used

The oil that was used on the trials, sufficient of which is being carried for the round voyage to the Pacific Coast, returning via Panama and Europe, is the same as that furnished the motorship Californian. This was supplied by the Texas Company (known as Port Arthur light fuel), and shows the following analysis:

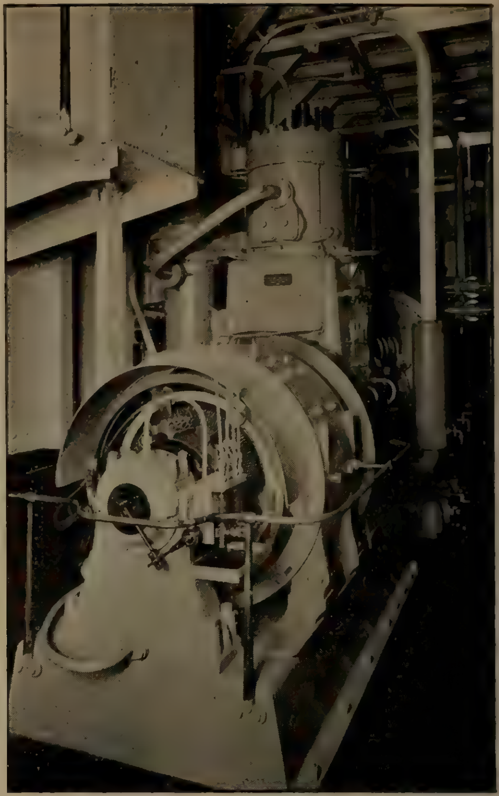
| | |
|---|---|
| Specific gravity at 60° F. | .913 |
| Be. corresponding | 23.5° |
| Flash open cup | 253° F. |
| Fire | 273° F. |
| Viscosity, Saybolt universal | 152 |
| Sulphur, per cent | .60 |
| Hard asphalt, per cent, insoluble in naphtha | 1.11 |
| B. T. U. higher heating value | 19,120 |

### Auxiliary Machinery

The motorship Missourian is identical in hull and machinery to the motorship Californian, with the exception of the deck machinery. The Californian has 14 winches built by the American Engineering Company, and the Missourian 14 winches of similar design but supplied by the Maine Electric Company. Both vessels, however, have two winches of the Sheppard planetary gear design located at the after end of No. 2 hatch. The windlass and hydro-electric steerer are the same in both vessels, having been supplied by the American Engineering Company. The chief difference in the deck machinery is that the Missourian's electrical equipment was supplied by the General Electric Company, while that of her sister ship, being the same as the motorship William Penn, was furnished by the Westinghouse Company. In equipping the Missourian's deck machinery with the General Electric apparatus it was the desire of the owners to try out the equipment of these two well-known electrical companies in a competitive way, as



At left—View across the forward end of the engine room of the motorship Missourian showing lubricating oil pumps.
At right—Auxiliary motor-driven air compressor



much of the success of the motorship as a whole depends on the reliability and efficiency of the electrical accessories in general and on the winches in particular.

The hull of the Missourian, like that of the Californian, was built at the yard of the Merchant Shipbuilding Corporation, Chester, and towed to Cramp's yard for installation of the machinery.

The port engine was turned over for the first time under power on July 1, and the starboard engine the following day. On the 4th no work was done, it being a holiday, and on the 6th the vessel carried out her 12-hour preliminary trial, as previously stated. This is an accomplishment worthy of mention. It speaks well for the standardization in design and accuracy of workmanship attained by special production methods, and completely refutes the general impression that it is necessary that a diesel engine undergo elaborate shop tests before being installed in the vessel.

The American-Hawaiian Company has the distinction among American private shipowners of having the first two all-American built motorships of large size. These vessels are being run on a route on scheduled sailings, in conjunction and in competition with their fastest and best freight steamers. American shipowners accordingly should follow with keen interest the performance of these motorships in service.

The master of the motorship Missourian is Captain R. M. Tapley, and the chief engineer Mr. Henry Timmer, both of whom have been long in the service of the American-Hawaiian.

## NEED OF AMERICAN SHIPS FOR WORLD SERVICE

IN a recent interview, P. A. S. Franklin, president of the International Mercantile Marine Company, said: "We need regular liner service all over the world. We need this service under the American flag so that the operation of our ships will not be interrupted by causes beyond our control. Before the war the American Line to Liverpool was the only regular service to England, and when British ships were withdrawn for war service, that one American line kept a route open that would otherwise have been closed. All the American Line passenger steamers were constructed as a result of the 1891 mail subsidy law.

"The International Mercantile Marine Company is an American corporation. The largest part of its stock—93½ per cent—is owned in this country. Its British tonnage was acquired at a time when it was impossible, as it is today, to operate profitably under the American flag. At the present time the International Mercantile Company operates the largest American fleet on the high seas—a fleet which aggregates 128,000 tons. Its organization is country-wide and world-wide in scope, and it is capable of absorbing a far larger American tonnage than it now possesses. Any statement that the International Mercantile Marine Company is controlled by influences hostile to the development of the American merchant marine is untrue. Under the most difficult conditions in the past, the company has borne its full share in the development of the mercantile marine in the past, and it will continue to do its share under the better conditions that seem to lie ahead."

## ERRATA

IN the article on the motorship Californian published in July, on page 420 appears the statement "all machinery, both main and auxiliary, was built in the Cramp shops after the Burmeister & Wain system." This should have read, "All diesel machinery and auxiliary pumps in the engine room were built in the Cramp shops." The major part of the auxiliary deck machinery of the Californian was furnished by the American Engineering Company, as had been stated in a previous article on the Californian and incidentally in the above article on the Missourian.

# THE KEIFUKU MARU

## Mitsubishi Zosen Kaisha, Kobe, Delivers First of Three Sisters for Imperial Railways' Shimonoseki-Fusan Cross-Channel Service

THE cross-channel service between Shimonoseki and Fusan is at present run by the Japanese Government Railway with a fleet of four steamers, Koma Maru, Shiragi Maru, Iki Maru and Tsushima Maru, performing the journey in more than eleven hours. Owing to the recent increase of traffic on this route, it was decided in 1920 by the Railway Department to reinforce the existing fleet with three larger and faster steamers of the latest improvements.

### Three Vessels Ordered

An order for these new ships was placed with the Kobe Works, Mitsubishi Zosen Kaisha, Kobe, Japan. The first of the three steamers has recently been completed and delivered to the owners to their complete satisfaction. In their arrangement and equipment, every attention has been paid to the special requirements of this service, and in this respect mention must be made of the work of T. Morisawa, the marine superintendent of the Government Railway, and his staff, under whose supervision on behalf of the Railway Department the vessel has been completed, while the design of both hull and machinery was intrusted to the builders to fulfill the requirements of the owners.

The principal particulars of the Keifuku Maru are as follows: length overall, 375 feet; breadth molded, 46 feet; depth molded to awning deck, 28 feet; gross tonnage, 3620; draught loaded, 15 feet; deadweight capacity in tons, 600. Number of passengers: first class, 45; second class, 214; third class, 690; total number of passengers, 949. Number of officers and crew, 159. Total number of passengers and crew, 1108. Highest speed on trial, 20¼ knots; speed in service, 17¼ knots.

The Keifuku Maru has been built, engined and equipped in accordance with the Japanese government shipbuilding and inspection rules under special inspection as an awning-deck vessel of coasting service.

### General Arrangement of the Keifuku

The Keifuku has a short forcastle with a raked stem, cruiser stern, two masts and two funnels.

The cellular double bottom extends between peak bulkheads, except under boiler space. The vessel is sub-divided by six watertight transverse bulkheads, all extending to the main deck, except the collision bulkhead, which is carried up to the awning deck.

There are two complete tiers of decks, viz., the awning and the main, and a promenade deck over the long deck-house amidships, a lower deck and a flying bridge deck.

The promenade deck is mainly allotted to the promenade of the first and second class passengers. On this deck forward are situated the captain's and the officers' cabins and special suite of rooms, consisting of a sitting room, a bed room and a private bath room, and a first class state room, also officers' bath. The smoking room and palm house cafe also are situated on this deck between two funnels. Ten life boats and one sampan are carried on this deck aft.

### Awning Deck Arrangement

The awning deck is almost entirely occupied by the passenger accommodations, the first class staterooms being amidships, the second class sleeping rooms and open space aft. The restaurant and the reception and writing rooms are also on this deck forward of the first class accommodation, and the sailors' quarters under the forecastle.

The upper third class passenger accommodations and accommodations for the engineers, clerks, doctors, and custom officers, etc., and the officers' and engineers' mess rooms, galleys, sculleries, pantry, stores and also engineers', firemen's, boys' and clerks' baths are located on the main deck. There is also a large mail room on this deck forward.

The lower deck abaft the engine space is arranged for the lower third class passenger accommodations, baggage room, steering engine space and carpenter's store. The firemen's and the boys' quarters are located on the lower deck forward of the boiler space, the space beneath these quarters being devoted to a cargo hold. There are a fish hold, provision stores and chain lockers in the fore hold.

Excellent results have been achieved in fitting out the passenger accommodations on the Keifuku Maru, and particular attention has been paid to insuring the

The Keifuku Maru

Staircase on the Keifuku Maru

comfort and pleasure consistent with the requirements of a short passage. The public rooms include a smoking room, palm cafe, restaurant, and reception and writing room, all of which are adequately decorated and furnished.

The smoking room is finished in stained oak in the Elizabethan style. A large wagon headed skylight with attractively designed stained glass and large square windows admits air and light. A bar with counter is provided at the forward end of the room. In this room four secluded corners for the card players and smokers are provided with whist tables, leather cushioned seats and chairs, all of which are well harmonized. The floor is laid with rubber tiling of special design, well matched to the room.

### The Palm House Cafe

A special feature of the palm house cafe adjacent to the after end of the smoking room, is the striking originality that gives to the passengers the impression of sitting in a greenhouse on shore. The specially designed windows of exceptional size and a large stained glass skylight aid materially in lighting and ventilating the room. The walls are pleasingly finished in green trellis-work on braided rattan ground over marble skirting, and four artistic oval cloisonne plaques and a large oval thick mirror are attractively arranged. The floor is covered with rubber tiling of chess-board pattern in dark green and white.

At the after end of the palm house cafe there is a grand stairway leading to the main entrance on the deck below, which is finished with handsome balusters and hard wood rails. At the head of this stairway a large oil painting, "A country scene at Chosen (Korea)," by H. Kanayama, is mounted.

### Design of the Restaurant

A spacious and airy restaurant, situated at the forward end of the awning deck house, is framed in nara (a kind of oak) with elegant silk panels over dado of polished nara. The ceiling is paneled and painted in dull white. A handsome stained glass skylight and glass mosaic plaques are fitted overhead. A number of small tables accommodating parties of four, and one of small tables accommodating parties of four, and one larger table for six are arranged by the bay windows on each side. An imitation fireplace at the forward end adds to the comfortable appearance of the room, and over this an artistic picture of cut-velvet is mounted representing the garden scene of the Keifuku palace. The floor is of neatly designed rubber tiling.

The reception and writing rooms adjoining the after-end of the restaurant have stained glass swinging doors on each side. The room is tastefully finished with extra large panelling painted in light shade in stained oak framing and decorated with a number of carved reliefs. The writing tables, seats, tea tables and chairs, all well harmonized to the room, are comfortably arranged. The floor is covered with rubber tiling. The special suite of rooms is arranged entirely separate from the ordinary first class accommodation. The sitting room is finished in fumed oak with panels of silk damask. The ceiling is plain but tastefully

A corner of the smoking room

treated, having ornamental fixtures. All furniture gives a cozy effect to the room. A picture of silk embroidery representing resting lions is hung on the wall. The special bedroom is furnished with a large bedstead, dressing table, wardrobe and chair, all of which harmonize well with the joiner work of this room. The floors of these rooms are covered with thick carpets.

An effective ventilation for the third class accommodation is provided by means of motor fans.

The electric lighting throughout is on an extensive scale, all fixtures fitted in the public rooms having been designed to harmonize with the general scheme of decoration and architecture.

### Propelling Machinery

The propelling machinery consists of two sets of Parsons combined impulse and reaction geared turbines of the modern high speed type, and each set drives one of the twin propellers through a single reduction gearing. The machinery is designed to develop 8000 S. H. P. Each set consists of two turbines arranged in series, one H. P. turbine on the inboard and one L. P. turbine on the outboard of the vessel. The H. P. turbine has one impulse stage and 5 reaction stages of 7 rows each, and the L. P. turbine 11 stages, 22 rows in all. Astern turbines are incorporated in the forward end of the L. P. turbine casings, being able to develop about 60 per cent of ahead full power.

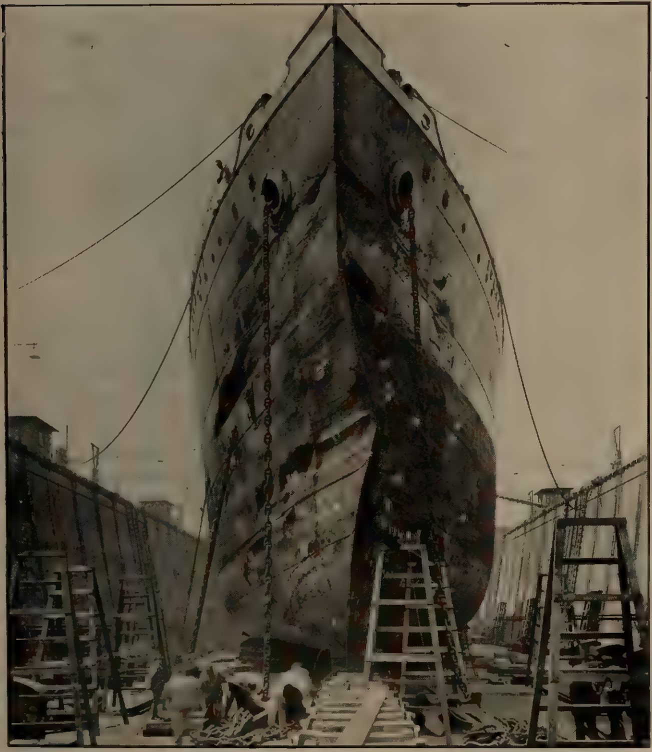
A forced lubrication system is provided for all bearings, gearings and shaftings. The main thrust bearings are of the single collar pivoted type.

Steam is supplied by eight cylindrical marine boilers, designed for a working pressure of 200 pounds a square inch and superheat up to 120 degrees F. The boilers are arranged in two groups of four each with two stokeholds as shown in the general arrangement plans. Forced draft of closed ash-pit system is installed.

The results of the official trial trip were highly satisfactory, extracts of which are shown tabulated as follows:

Results of official trial trip: Date of trial, April 1, 1922. Weather and sea, fine, calm. Draught: fore, 15 feet 2 inches; aft, 15 feet 1¼ inches; mean, 15 feet 1⅝ inches. Corresponding displacement, 3940 tons. Speed, mean of three double runs on 3-mile measured course, 19.776 knots. Coal consumption per S. H. P. hour, 1.3 pounds. Boiler pressure, 200 pounds. Steam pressure: H. P. turbine, 167 pounds; L. P. turbine, 8 pounds; vacuum, 28.5 inches. R. P. M. of propeller: Port, 216.83; starboard, 215.66; mean, 216.25.

# THE IOWAN REPAIRS



The Iowan in drydock at Portland

THE American-Hawaiian steamer Iowan on May 28, while steaming up the Columbia River on the run from Seattle to Portland, met the British steamer Welsh Prince going out from Portland loaded. Through mistaken signals the Welsh Prince drew across the bows of the Iowan and was struck fairly on the starboard bow. In a few minutes she was on fire and sank a little later, seven of her crew being drowned in the forecastle. She was a total loss as to hull, although some of the cargo was salvaged. Lying in the fairway, as an obstacle to navigation, she will presently have to be blown up.

The Iowan with a badly crumpled bow, as shown in the illustration, proceeded to Portland. W. H. Stewart, marine surveyor, was sent from San Francisco by the American-Hawaiian Company to plan and supervise the work of repairs, draw up specifications and receive bids. He found that practically all of the shell and deck plating and frames in way of the forepeak were more or less damaged. In all 40 shell plates had to be dealt with, 27 being entirely removed. The starboard hawse pipe was broken and had to be renewed.

Upon opening the bids it was found that the Albina Marine Iron Works was low bidder at $57,000 and 19 days. The contract was awarded to this company and the ship taken for repairs to the Port of Portland dock where the work was satisfactorily completed, with a detention of one day, largely due to the fact that there was a scarcity of efficient labor and some "soldiering" at the wind-up, there being no other work in sight.

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## PACIFIC STEAMSHIP LANES

IT is more than a little surprising to discover that traffic between North America and Asia has become so heavy as to require lanes such as have been established on the North Atlantic for years. Yet the fact scarcely can be questioned, the authority for the statement being Captain F. B. Bassett, naval hydrographer, who has been engaged in obtaining data on the subject and now expects to announce within a short time eastbound and westbound tracks between Puget Sound and Japan. Routes between San Francisco and the Orient by way of Hawaii will require further study.

Although fog has had much to do with increasing the hazards of navigation in the more northern waters of the Pacific, the primary reason why lanes are needed is increased traffic. Inasmuch as that business, however large it may be, is literally in its infancy, Captain Bassett has acted opportunely in anticipating worse conditions, and his recommendations, when they are made, should be followed by all vessels.

# SINGLE VERSUS TWIN SCREWS

## "Single Screw Must Always Show Highest Efficiency" if Only Revolutions of Machinery Are Adapted to the Best Pitch Ratio

By C. O. LILJEGREN

SINCE the investigations by the elder Mr. Froude, any number of theories of the screw propeller have been published. The subject in itself is very intricate and has been made still more so by many authors. How incomplete and difficult is the problem, and how little understood even by experts, is shown clearly by the discussion in motorship journals of single versus twin screws. Some writers have tried to prove that twin screws are more effective than single screws, at least for motorships.

This is perhaps not so surprising. Placed at the far end of the ship, the propeller seems to be nobody's child. The captain thinks it belongs to the engineer, and does not wish to bother about it. The engineer does not care about the screw, because it is on the outside of the ship. Yet no detail on board an engine-driven vessel deserves more care and investigation, especially by shipowners, because no single detail on board a ship can so quickly squander hard-earned money.

In order to make the action of the screw propeller more clear, it will here be treated from the standpoint of the planes of a flying machine or the sails of a ship, because most seafaring men are more or less familiar with these forms of propulsion. Their action in the air can be seen by the eye, while the propeller is more hidden from view.

### Action of An Airplane

If a plane is forced obliquely through the air, it creates a pressure in front and a suction at its back, each acting in a normal direction to the plane, whatever its course. At low and medium speeds, suction is predominant, but it can naturally never exceed the atmospheric pressure in air. In water, this suction (or cavitation) plays a strong part in the efficiency of the screw propeller, of which more later. The front pressure can of course reach any height, depending on the speed and the inclination of the plane.

The force formed by the combined pressure and suction is used in many different ways, and constitutes one of our principal power agents. In airplanes it is used to lift the weight of the entire machine through the air; in sailing vessels, to propel the ship through the water; in windmills, turbines and the like, to drive machinery of various kinds; in steam and motorships, to propel the ship by either wheels or screws.

### Maximum Efficiency Sought

Unfortunately, however, the force so created never can be used entirely, a large part of it being lost in its application. The loss is measured by the efficiency, which is the proportion of the useful part to the total force or power. Right here lies a big difference in the various power agents: wind can be had free, and hence we seek only for maximum force obtainable, regardless of efficiency, in sailing ships and windmills. But wherever machinery is used in production of power, the maximum efficiency, and not the maximum force, is eagerly sought. In the screw propeller, however, maximum force (or thrust) is sometimes sought for, especially in tugboats and shallow draft vessels that require a big thrust to the square inch of propeller area. This matter has never received the attention it deserves, so let us look into it a little.

If a flying machine rushes through the air, its wings meet a certain resistance acting in a normal direction to the plane. In Figure 1, let

$v$ = velocity of plane in feet a second;
$a$ = angle of inclination between the plane and its direction;
$R$ = resultant force in pounds, in a direction normal to the plane;

then, theoretically,

$R = f\ v^2 \sin^2 a$ (f a constant 1.70)..........(1)

Experiments have shown that the resultant does not vary as the square of the sine, but as the simple sine, and the formula becomes,

$R = 1.70\ v^2 \sin a$..........(2)

The vertical component of $R$, or $R \cos a$, is available for useful work (lifting the machine) and equals

$R_v = 1.70\ v^2 \sin a \cos a$..........(3)

The horizontal component $R \sin a$ is clearly resisting the progress of the flying machine, and represents so much lost work (destructive in its action). It equals

$R_h = 1.70\ v^2 \sin^2 a$..........(4).

The efficiency of the plane is the proportion between the vertical component (3) and the horizontal component (4), and equals clearly **cot a**, which is maximum for a = 0°. This maximum can never be reached (wings must be of infinite area), but from this discussion can be seen the necessity of using a small inclination of the plane against the horizontal line.

If on the other hand we desire the maximum lifting power, or maximum of (3), theoretically this should be gained when a equals 45°. The inclination of the plane is thus midway between the two opposing forces, or rather directions, gravity and course of the flying machine. This holds good in every power agent, sails, turbines and propellers.

In practice, however, it has been found that the shape of the plane has a great influence on the angle of maximum lifting power. In the opinion of the writer, this is caused by the different relative lengths of the side edges of the plane, along which powerful eddies set in behind, the plane thus partly destroying the suction. At a speed where the suction amounts to a complete vacuum (if such were possible), the theory should hold good. The difference between the theoretical and the actual lifting power is shown by the two lines in Figure 2 for a square plane: the full drawn line denotes the actual power, the dotted line the theoretical, up to an angle of 45°.

The difference is of the greatest importance for the screw propeller, because it makes possible a much higher thrust to the square inch at a far better efficiency than otherwise would be obtainable. Instead of a theoretical 70 per cent efficiency **(cot 45° equals 0.7, or 70 per cent)**, all propeller experiments show a maximum efficiency of 80 per cent, and yet only a small part of the blade can have the exact angle for maximum efficiency, as will be explained later. It is the first time, I believe, that this important fact is mentioned in relation to the screw propeller.

### The Screw Propeller Discussed

Turning now from the flying machine to the propeller, let us first look at a small part of the blade, and consider it to be a plane moving obliquely through the water as above. Here the relative speed of the screw to the water complicates matters, but the angle of inclination a is clearly the angle at which the water particles strike the plane, or, in other words, the slip angle. The relative speed of the screw is made up of the speed of the ship less the speed of the wake, and the rotative or side speed of the plane, Figure 3. This side speed can be best likened to a beam wind in a sailing vessel: if the ship were standing still, the water would always strike the screw plane sideways. But the speed of the ship alters all this: it is still more altered by the fact that at low speeds the water is drawn (or sucked) into the propeller race.

Using the same notations as in Figure 1, and calling the slip angle **a**, we must first find the value of a through Figure 3. Let

v = speed of vessel in feet a second;
V = transverse speed of plane;
$V_r$ = speed of plane through water;
b = angle between the transverse speed V and the resultant speed $V_r$;

V and v always stand square to each other; by completing the triangle of speeds we get as usual

$$\tan b = \frac{v}{V},\quad V_r = \frac{v}{\sin b};\ \text{and}\ V_r = \sqrt{v^2 + V^2} \ldots\ldots\ldots (5)$$

$V_r$ is always larger than either v or V; its direction depends on the relative sizes of v and V, and is measured by the angle **c**, or 90° — **b**. Clearly the angle **c** is the limit for the angle of the plane with the direction of the ship, or with the center line; the plane in this direction just cutting the water without causing any thrust whatever. If we want a forward thrust, the plane must be turned to an angle smaller than **c**; and if we want to go backwards, the plane must stand at an angle larger than **c**. Hereon rests the principle of feathering screws.

### When Maximum Thrust is Obtained

In propeller design, we do not use the angle **c**, but only the angle **b**, and the difference between the plane direction and **b** is clearly the angle of inclination **a**

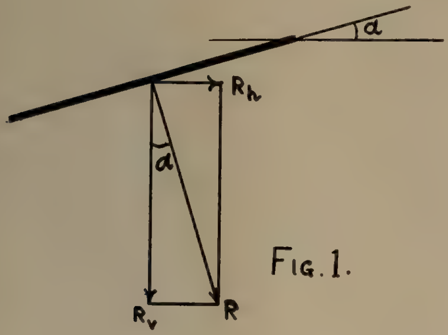


Fig. 1.

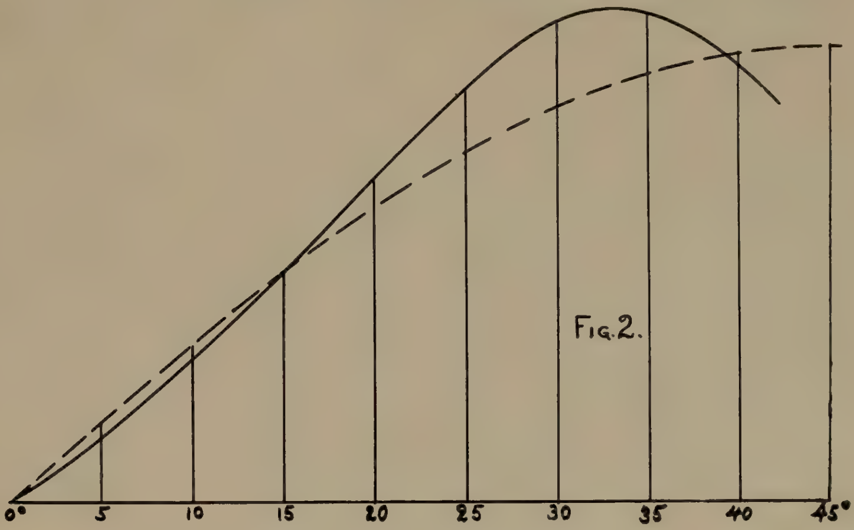


Fig. 2.

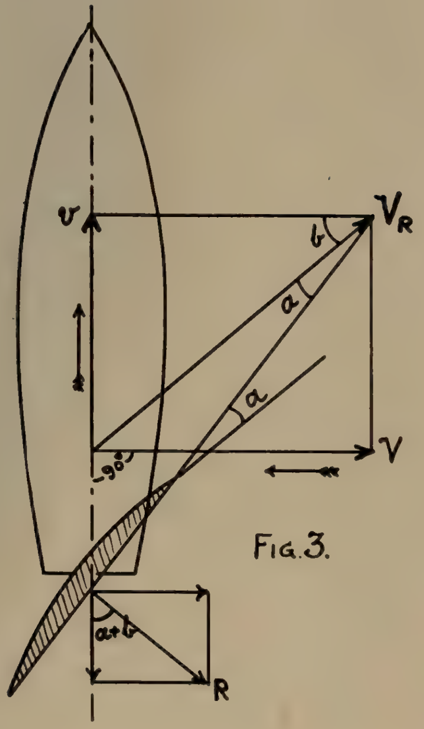


Fig. 3.

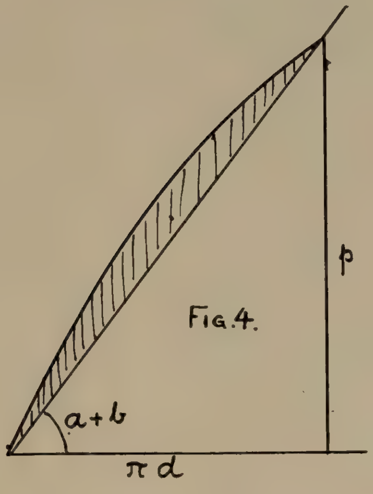


Fig. 4.

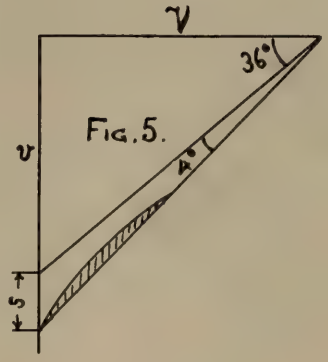


Fig. 5.

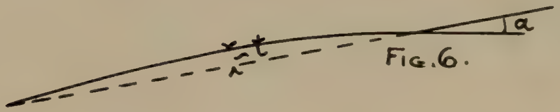


Fig. 6.

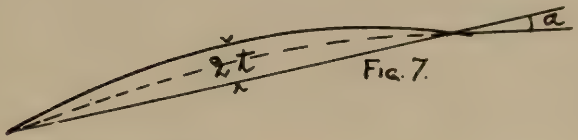


Fig. 7.

Diagrammatic sketches by the author

between the plane and the water, just as between the plane and the air in the case of the flying machine. The angle $a$ is also a measure of the yielding, or slip, of the water, and is thus called the slip angle. A big slip angle denotes a large slip, and vice versa. From the discussion above we here too find the maximum thrust, when the angle of inclination $a$ halves the angle between the two speed directions, or $c$. And we get maximum efficiency when the angle $a = 0$. In the first case, the slip will be very large, over 50 per cent, and in the second case, the slip is zero. As said before, this can never be reached in practice on account of the tremendous propeller necessary, and of the friction in the water between the plane and water particles. And the maximum thrust can never be reached on account of cavitation, except at very low speeds, as in towing.

What is the relation between the angles $a$, $b$, and the geometry of the screw propeller? A screw is measured by its pitch $p$, diameter $d$, and its pitch angle, which denotes the angle between the screw plane and the transverse plane. In Figure 3, the pitch angle is evidently $(a + b)$, and from Figure 4 we find

$$\tan (a + b) = \frac{p}{3.14\,d} \quad \text{..........} \quad (6)$$

The pitch angle thus contains both the speed angle $b$ and the slip angle $a$; this is the fundamental rule in propeller design. To find the most efficient screw we must first find the best slip angle $a$ and the best pitch angle $(a + b)$, from which the relation between pitch and diameter is found. The actual dimensions of the screw to give the necessary thrust can then be calculated from propeller experiment data. The dimensions should always be based on the thrust, not on the horsepower of the machinery.

### Maximum Efficiency Obtained

In Figure 3 is shown a section of the screw, greatly enlarged to make it all clearer, in its true relation to the ship. The blade is standing vertically, and by its rotation to starboard a resultant force **R** is created. The longitudinal component of **R** is used to overcome the resistance of the ship, and the transverse component is overcome by the torque of the propelling machinery which is at the bottom of it all. From (2) we get, when $v$ is taken to mean $V_r$, and $\sin a$ denotes the slip angle $a$,

$$V_r = 1.70 \frac{v^2}{\sin^2 b} \sin a \quad \text{..........} \quad (7)$$

The longitudinal component equals $V_r \cos (a + b)$, or

$$1.70 \frac{v^2}{\sin^2 b} \sin a \cos (a + b) \quad \text{..........} \quad (8)$$

and is a measure of the thrust square a foot of developed area. The transverse component equals $V_r \sin (a + b)$, or

$$1.70 \frac{v^2}{\sin^2 b} \sin a \sin (a + b) \quad \text{..........} \quad (9)$$

By a very ingenious procedure, Froude has shown that the maximum efficiency is reached, when $\sin a$ equals twice the coefficient of friction between the propeller blade and the water, and when $\sin (a + b)$ equals 0.7, or $(a + b) = 45°$, when $\tan (a + b) = 1$. For a highly polished bronze propeller the coefficient of friction is less than for a cast-iron propeller, hence the former should work with less slip than the latter, if maximum efficiency is sought. Although the analysis of Mr. Froude is based on formula (2), and not quite correct according to Figure 2, this makes very little difference in his conclusions, none at all in the proportion shown in Figure 2, where $(a + b)$ for maximum efficiency = 33°.

### The Best Pitch Angle

From an analysis by the writer, too long to be inserted here, it seems that the best pitch angle $(a + b)$ is 40° instead of 45°, and that the best slip angle also should be a little less than the value found by Mr. Froude. The coefficient of friction for bronze propellers is generally taken to be 0.004; the sine of the slip angle is twice this figure, and thus $a = 4°$. This means that the best speed angle $b$ is 36°, and $\tan 36°$ is 0.73, hence from (5)

$$0.73 = \frac{v}{V};\ v = 0.73\,V, \text{ and } V = 1.37\,v \quad \text{..........} \quad (10)$$

But as the slip angle $a$ should be a little less than 4°, we may state that the transverse speed should be 33 per cent larger than the speed of the ship less the speed of the wake. The wake must be deducted, because it alters the direction of $V_r$ as shown in Figure 5. This is a correct speed diagram of the screw propeller giving the maximum efficiency.

Now if this speed diagram could be kept over the entire blade surface, evidently the very best results would be obtained. But as the transverse or rotative speed becomes less nearer the axis, the pitch angle $(a + b)$ can only have its best value 40° at a certain distance from the axis. We shall not here discuss the possibilities of radially increasing pitch, but consider the propeller only as a true screw with constant pitch $p$. This does not mean that the effective pitch is constant; in fact, with the common crescent-shaped blade section, the real pitch increases both axially and radially, as we shall find later.

### Relation of Pitch and Diameter

Now near the boss we find from Figure 3 that the longitudinal component of **R** is very small and hence that part of the blade ineffective; near the periphery of the propeller the fluid friction is very large and tends to decrease the efficiency of the screw. Hence the center of effort of the blade should not only be the widest part, but right here should the speed diagram Figure 5 apply. With the common elliptical form of the blade, the center of effort lies at a distance of $0.60r$ from the axis.

From Figure 4 and formula (6) we get that

$$\tan 40° = \frac{p}{3.14\,d} = 0.84, \text{ or } p = 0.84 \times 3.14\,d;$$

by $d$ is here meant the diameter at the center of effort, or $0.60\,d$ at the periphery of the screw. Hence

$$p = 0.84 \times 3.14 \times 0.60\,d, \text{ or } p = 1.58\,d \quad \text{..........} \quad (11)$$

The screw propeller with the maximum efficiency must have a pitch of 1.58 times the diameter. Herein lies the very kernel of the propeller theory. And this theory has been confirmed by every propeller experiment to this very day.

### 14 Per Cent Slip Best

If we now work out the value of the slip angle in percentage of the speed of the ship less wake, we find a real slip of 14 per cent for maximum efficiency, which is most astonishingly confirmed by the experiments too. A real slip of 14 per cent seems to be best, no matter what the pitch ratio may be. But as the pitch ratio is changed from 1.58, the efficiency grows less, slowly at first, more quickly as the ratio nears unity.

With the pitch ratio settled according to (11), it becomes a comparatively easy matter to find the pitch, diameter and the revolutions of the best possible screw propeller for a certain vessel. The various experimental data give the pitch required, and from the pitch we get the revolutions, because pitch times revolution is directly proportional to the speed of the vessel, and inversely proportional to the slip factor, or,

$$p\ N = \frac{v}{1 - s} \quad \text{(12)}$$

where s denotes the slip (true) in parts of unity.

A word of caution should be added against the indiscriminate use of experimental data as a guide for estimates of full size propellers, because the constants used are based on the assumption that the screw propeller actuates every water particle within the disc area. With a small four-bladed model propeller this may be practically correct on account of the viscosity of the water; but with fewer blades and bigger diameters only a very small part of the disc area is actuated. The viscosity being the same for large or small propellers, the experimental data is the more unsafe to use the larger propeller. It can easily be shown that the mass **M** of the water actuated equals

$$\mathbf{M = A.\ sin\ a\ tan\ (a + b)\ v} \quad \text{(13)}$$

where **A** denotes the projected area of the propeller.

### Some Complicating Factors

Now if the number of revolutions from (12) is the same as that of the motor used, all is well, and the owner may be sure of the smallest possible fuel expenses for his vessel. But in most cases the machinery is designed without reference to the ship itself, and the revolutions are kept high to reduce the weight of the machinery. In a single-screw cargo vessel the revolutions are always higher than the value in (12), but the nearer we can approach this value the better, and by using twin or triple screw, a more efficient screw propeller may be used.

Herein lies the advantage of twin screws for a heavy cargo vessel; but against this must be set the almost double first cost of the twin machinery, higher fuel expenses, and the heavy drag in the water of the shafts, brackets and bosses, etc., of the twin screws. It is a great mistake to speak of twin screws, per se, as being more efficient than single ones, for no gain can be got from the former except in relation to the most efficient number of revolutions.

An example will show this better. Let us use Mr. McEntee's Model No. 2133 (described in this paper), which shows very good resistance results. The displacement of the full size ship is 13,137 tons; its shaft horsepower at 11 knots is 2000; wake factor, 0.31. From this we get the most efficient propeller:

| | |
|---|---|
| Diameter | 15.50 feet |
| Pitch (1.58 d) | 24.50 feet |
| Revolutions | 58 per min. |
| Efficiency | 79 per cent |
| Number of blades | 3 |

The actual propeller used in the model experiments had a diameter of 16 feet 7 inches and a pitch of 14 feet 9 inches. The revolutions were 90 and the efficiency 65 per cent. This means a saving of fully 25 per cent in fuel expenses, and shows the vital necessity of a high propeller efficiency for the net profit of a cargo vessel.

### Twin Screws Considered

Suppose now that twin screws were to be used. We must add at least 3 per cent to each shaft, on account of the extra resistance from the brackets, etc. Each screw would have a **d** of 11.10 feet, a **p** of 17.60 feet and would run at 81 r. p. m. The very latest motors of about 1000 b. h. p. average 115 r. p. m. against 150 only a year ago. Thus it seems that the most up-to-date motor manufacturers begin to understand the necessity of adjusting the motor to the screw, and not vice versa as usual—mostly with disastrous results to the shipowner's pocketbooks! Of course, the writer is fully aware of the difficulties to be overcome inside the motors themselves, but these difficulties must be overcome, or some kind of gearing, mechanical or otherwise, used to get the maximum efficiency of the propelling machinery and the minimum fuel expenses. If the speed of the motor can be adjusted nearly to the best speed of the screw, of course no gearing need be used; but where the difference in the screw efficiency amounts to 15 per cent or more, a simple and effective gearing should be used to advantage, if such a gearing can be found. Here is a big field for the inventive genius who, however, will have a hard time against the boneheaded conservatism of the shipowners and their superintendents. But improvements touching the earning capacity of cargo vessels are sure to be accepted by the former sooner or later, and herein lies a ray of hope for the inventor who has been turned down by the superintendents.

### Cavitation Troublesome with High Speeds

As mentioned before, in most vessels maximum efficiency is eagerly sought in the propelling machinery. But in tugs and shallow draft vessels maximum thrust and efficiency must be attained. As we saw, the more slip, the more thrust a square inch of propeller. But right here is met the greatest drawback in the application of theory to practice. It has been repeatedly shown in practice that cavitation becomes troublesome, when the thrust reaches a value of 11 to 12 pounds a square inch of projected area. This is clearly the limiting value of the pressure on the developed area too, and it is reached, when

$$\mathbf{sin\ a} = \sqrt{\frac{12}{1.70v^2 + 24}} \quad \text{(14)}$$

where **a** is the slip angle as before, and **v** the speed of the ship less wake. This formula shows that the higher the speed, the more is cavitation to be feared, and herein lies another difference between the model and the full sized screw. At a speed where the model screw shows no cavitation at all, the full sized one may have overstepped the safe limit for cavitation, in case a high thrust a square inch is sought, especially in high speed vessels. With low speeds, as in tug boats when towing, cavitation need never be feared, if the most efficient screw as found above is used. It should be noted that formula (14) relates only to this screw, and that the value of the slip angle and the slip depend on the pitch angle as well, or the pitch ratio.

### The Mean or Effective Pitch

For maximum efficiency, we have found the pitch ratio equal to 1.58 (11), and this value can be reached for a certain ship only at a distinct number of revolutions. In the discussion above, we have considered the blade as a thin sheet of metal, but in reality it must have a certain thickness to stand the strain. And with thickness follows a shipshape form to reduce the losses from cleavage. Hence both sides of the blades have different pitches, and it remains to find the mean pitch, or the effective pitch.

All bodies when forced through any fluid tend to keep their course according to their middle line. If the middle line be straight the course will be straight; if curved, it will be sinuous, like that of a pike swivel. Hence the middle line of a screw blade can be considered to come very close to the effective pitch. It has been found in flying machine practice that a certain arch in the wings gives best results, i. e. when $\mathbf{B} = 25\mathbf{t}$ (Figure 6), and that the angle between the middle line and the chord should equal, at the front of the wing, the angle of inclination **a** between the chord and the direction of the flying machine. In other words, the middle line of the wing section should point to the course of the machine at the front.

### The Best Proportions

Applying these facts to the screw propeller section, we see that the arch should be 1-25th of the breadth of the section B, Figure 7, and that the angle between the middle line and the chord should exactly equal the slip angle **a.** If the thickness of the blade is made equal to 1:12.5 of its breadth, the under or driving side of the blade can be made straight, and the driving face of the screw a true screw. Here we have found the reason why a true screw mostly is used for the propeller, and shows the best efficiency; with a true screw we really get an arched effective driving face just as in a flying machine wing, or in fact a bird wing too. If the thickness of the blade is more than 1:12.5 of its breadth, both faces should be convex; but if the thickness is less than this amount, the driving face should be concave. In order to get the best results, theory shows that the blade section should be "clubfooted" at the front edge; but as the screw propeller must drive both ways, both edges are made pointed in practice.

We have thus found that the single screw always must show the highest efficiency and the smallest fuel expenses, if the number of revolutions of the machinery is adapted to the best screw of 1.58 pitch ratio. Twin screws will always augment the resistance of the vessel, and working in a less favorable wake, must cause higher fuel expense than the single screw. But we have also found that under certain conditions, depending solely on the relative revolutions of the screws, double, triple or even quadruple screws may show a decided gain over a single. Of course, duplicating the machinery will add a certain factor of safety to the ship, if the motor alone is used for propulsion. In an auxiliary ship, twin screws can never pay their cost over single, and should never be used. The unlucky owners of many twin-screw auxiliary sailing ships have certainly found that out long ago to their loss. But many will never learn in any other way.

# WORLD SHIPBUILDING

WORLD shipbuilding today is actually below the pre-war level, says a statement just issued by Lloyd's Register of Shipping. The decrease in production has been steady since the fall of 1919, and the volume of new orders continues to be far below the completion of orders in hand. While the returns for the quarter ended July 1 show that the aggregate of contracts in hand is nearly 800,000 gross tons more than the total at July 1, 1914, so many suspensions of work have been directed by those who placed the orders that the actual volume of construction actively under way is slightly below the pre-war figure.

Although there has been a sharp shrinkage in the gross aggregate of tonnage in hand during the past three months, the total for the shipyards of the United States shows a small gain. On April 1, the American aggregate was less than before the war, but on July 1 it was slightly greater. This country, however, was practically the only one in the world to show a gain during the past quarter.

### British Stoppages Heavy

The gross aggregate of tonnage on July 1, as compared with the previous quarter, was as follows in gross tons:

| | July 1 | April 1 |
|---|---|---|
| United States | 150,623 | 136,266 |
| United Kingdom | 1,919,504 | 2,235,998 |
| Other Countries | 1,165,303 | 1,307,358 |
| World total | 3,235,430 | 3,679,622 |

Stoppages ordered on this work fell more heavily on British shipyards than on those of all the other maritime nations combined, the result being that, while the actual British total is nearly 300,000 tons below the pre-war figure, the aggregate of the other shipbuilding countries is about 250,000 tons higher. The following shows the result of the last quarter's suspensions, in gross tons:

| | Britain | Others |
|---|---|---|
| Work contracted | 1,919,504 | 1,315,926 |
| Less suspensions | 481,000 | 290,000 |
| Actual work | 1,438,504 | 1,025,926 |

The actual construction under way at present, as compared with that just before the war, shows how British shipyards have been affected:

| | July 1, 1914 | July 1, 1922 |
|---|---|---|
| United Kingdom | 1,722,000 | 1,438,504 |
| United States | 148,000 | 150,623 |
| Other Countries | 626,000 | 875,303 |
| World total | 2,496,000 | 2,464,430 |

### A Decline of 5,600,000 Tons

The world construction now actually under way shows a decline of nearly 5,600,000 gross tons from the peak, which was attained in September, 1919, when 8,048,000 tons was being built. The United States' present total of 150,000 tons, compared with the high level of 4,186,000 tons reached in the first quarter of 1919, shows a decrease of more than 95 per cent. It is interesting to note that the relative proportions of the world's shipbuilding have changed considerably since the pre-war period. Great Britain, which then had 69 per cent of the total, now has only 58 per cent; the United States has still its 6 per cent, as in 1914; and the other countries have increased their share from 25 per cent to 36 per cent.

Declines continue to be shown in the returns covering the construction of tankers, but more than 500,000 gross tons of this type of vessel is still under construction. The decrease since the first of this year is shown in the following table (figures in gross tons):

| | Jan. 1 | July 1 |
|---|---|---|
| United States | 103,000 | 60,880 |
| United Kingdom | 536,000 | 383,221 |
| Other Countries | 154,000 | 85,810 |
| World total | 793,000 | 529,911 |

### Few Orders Being Placed

Returns of launchings and new work for British shipyards show that the output still continues markedly in excess of the volume of new work. During the three months ending July 1 launchings in the United Kingdom aggregated 148,606 gross tons, compared with work begun on new vessels which will have a total tonnage of only 37,987 tons. A slowing down in output, however, is indicated by a comparison with the returns for the previous quarter, when launchings represented 333,000 tons, as against new work totaling 49,000 tons.

The total work now under way in German shipyards is estimated by Lloyd's Register to be 500,000 gross tons.

# A RECORD OF VANISHED VESSELS, II

## The Ships of the Famous "California Fleet" of the '50s and '60s—Their Names, Where and When Built and Their Final Ends

By F. C. MATTHEWS

| Name | Tons | Built at | Year | Remarks |
|---|---|---|---|---|
| Malay | 812 | Chelsea | 1852 | As bktn., S. F.-Mollendo; into Tahiti, in dis.; condm'd, 1891. |
| Mameluke | 1300 | Boston | 1855 | Sold, about 1861, becoming British ship Milton. |
| Mandarin | 776 | New York | 1850 | Hongkong-New York; lost on reef near Batavia, 1864. |
| Mary | 1149 | Marblehead | 1854 | New York-S. F.; into Callao, in distress; condmned, 1867. |
| Mary Bangs | 958 | Boston | 1856 | S. F.-New York, via Altata; wrecked near Altata, 1874. |
| Mary L. Sutton | 1448 | Mystic | 1856 | Lost at Bakers Island, 1864. |
| Mary Ogden | 908 | Warren | 1854 | Reported sold, early '70's. |
| Mary Robinson | 1371 | Bath | 1854 | Lost at Howlands Island, 1864. |
| Mary Whitridge | 978 | Baltimore | 1855 | Converted into a barge, about 1885, at Boston. |
| Mastiff | 1035 | Boston | 1856 | S. F., Sept. 10, 1859, for Hongkong; burned when 5 days out. |
| Matchless | 1200 | Chelsea | 1853 | New York-Hongkong; missing, 1857. |
| Memnon | 1084 | New York | 1848 | Hongkong-London; lost in Straits of Gaspar, 1851. |
| Mermaid | 533 | Boston | 1851 | Bombay-Hongkong; lost on Pratas Shoals, 1856. |
| Messenger | 1375 | New York | 1852 | New York-Hiogo; condemned at Mauritius, 1878. |
| Meteor | 1067 | Boston | 1852 | Reported as sold foreign, 1862. |
| Midnight | 838 | Portsmouth | 1854 | New York-Yokohama; abandoned in Banda Sea, 1878. |
| Minnehaha | 1698 | Boston | 1856 | Lost at Bakers Island, September, 1867. |
| Mischief | 500 | Somerset | 1853 | Sold, about 1855, going under Danish flag, as Sleipner, bark. |
| Monsoon | 773 | Bath | 1851 | Sold, 1865, and went under Norwegian flag. |
| Monsoon | 1099 | Newcastle, Me. | 1860 | Lost at Howlands Island, January, 1865. |
| Morning Light | 938 | Philadelphia | 1853 | As a Federal cruiser, capt'd by Confederates, destroyed, 1863. |
| Morning Light | 1713 | Portsmouth | 1853 | Sold, 1863, and went under British flag. |
| Morning Star | 1066 | Medford | 1853 | Sold, 1863, becoming British ship Landsborough. |
| Mountain Wave | 946 | Charlestown | 1852 | Boston-Calcutta; condemned at Rio, 1865; repaired and continued as Maria Del Gloria, bark. |
| Mystery | 1200 | Boston | 1853 | Sold, 1854, and went under British flag. |
| N. B. Palmer | 1490 | New York | 1850 | As Norwegian ship, abandoned in No. Atlantic, January, 1892. |
| Nabob | 1245 | Chelsea | 1854 | Liverpool-Shanghai; lost on north end of Luzon, 1862. |
| Napier | 1811 | Baltimore | 1856 | As British ship, lost at Bakers Island, 1871. |
| National Eagle | 1095 | Medford | 1852 | Lost on Yucatan coast, early in '80's; then bark rigged. |
| Neptune's Car | 1616 | Portsmouth, Va. | 1853 | Sold, 1863, and went under British flag. |
| Neptune's Favorite | 1194 | Chelsea | 1854 | Sold, 1863, becoming British ship Mataura. |
| Nightingale | 1066 | Portsmouth, N. H. | 1851 | As Norwegian bark, abandoned in No. Atlantic, April, 1893. |
| Nonpareil | 1097 | Frankfort, Me. | 1853 | Sold, 1863, and went under British flag. |
| Noonday | 1177 | Portsmouth, N. H. | 1855 | Boston-S. F.; lost on Noonday Rock, off S. F. entrance, 1862. |
| Norseman | 812 | Boston | 1856 | Sold, 1863, and went under Siamese flag. |
| North Wind | 1041 | New York | 1853 | Ashore off Bintang; got off; sold, Singapore, '63; lost, 1871. |
| Northern Eagle | 664 | Boston | 1854 | Burned, 1859; rebuilt; as bark W. H. Gawley, lost, 1880, outside San Francisco. |
| Northern Light | 1021 | Boston | 1851 | Havre-N. Y.; aband'd, sinking, after colln. in No. Atlantic, '62. |
| Nor'wester | 1134 | Medford | 1854 | New Orleans-Liverpool; burned off Key West, February, 1873. |
| Ocean Express | 1571 | Medford | 1854 | Sold; was under differ't flags; was lastly, Norw. sh. Friedrich. |
| Ocean Pearl | 846 | Charlestown | 1853 | Sold, 1864, and went under British flag. |
| Ocean Rover | 776 | Portsmouth, N. H. | 1854 | Lost on reef near Pernambuco, July, 1870. |
| Ocean Telegraph | 1494 | Medford | 1854 | Sold, '62; renam. Light Brigade; lastly, coal hulk at Gibraltar. |
| Onward | 874 | Medford | 1852 | Purchased in 1862 for U. S. sail'g cruiser; equip'd with 8 guns. |
| Oracle | 1196 | Thomaston | 1853 | Sold, 1862, and went under British flag; later, sold to Peru. |
| Oriental | 1060 | New York | 1849 | Going to sea from Foochow, for N. Y., lost on a reef, Feb., '54. |
| Orpheus | 1067 | Boston | 1856 | Wkd. nr. Cape Flattery, after sinking S. S. Pacific, in col., '75. |
| Osborne Howes | 1100 | Medford | 1854 | Sold at Calcutta, 1864. |
| Pampero | 1375 | Mystic | 1853 | Bought by U. S. govt. in Dec., 1861, for use as transport. |
| Panama | 1139 | New York | 1853 | Bankok-Pernambuco; into Bahia in distress; reptd. sold, 1867. |
| Panther | 1185 | Medford | 1854 | Nanaimo, B. C.-S. F.; wrecked in De Haro Straits, Jan., 1874. |
| Paragon | 899 |  | 1852 | Calcutta-N. Y.; condemned and sold at Galle, Ceylon, 1862. |
| Peri | 560 | Robbinstn, Me. | 1852 | Sold, early '60's, becoming Norwegian bark Brilliant. |
| Peruvian | 1156 | Boston | 1857 | Wrecked near Cape Cod, January, 1873. |
| Phantom | 1174 | Medford | 1853 | San Francisco-Hongkong; lost on Pratas Shoals, July, 1862. |
| Polynesia | 1084 | Boston | 1852 | Burned while anchored in S. F. harbor, ready to sail, Mch., '62. |
| Prima Donna | 1529 | Mystic | 1858 | Sold late '80's to Austrian owners. |

| Name | Tons | Built at | Year | Remarks |
|---|---|---|---|---|
| Queen of Clippers | 2365 | Boston | 1853 | Sold, 1856, at Marseilles and went under French flag. |
| Queen of the East | 1285 | Damariscotta | 1851 | S. F.-Australia, to load coal for China; lost in So. Pacific, '72. |
| Queen of Pacific | 1356 | Pembroke, Me. | 1852 | New York-San Francisco; lost on reef near Pernambuco, 1859. |
| Queen of the Seas | 1335 | Boston | 1852 | Liverpool-Shanghai; foundered near Formosa, September, 1860. |
| R. B. Forbes | 756 | Boston | 1851 | Sold at Hongkong, 1864; renamed Maria Pia. |
| Race Horse (bk) | 530 | Boston | 1850 | Boston-Gibraltar, January, 1865; missing. |
| Race Hound | 499 | Thomaston, N. Y. | 1851 | Reported sold in China, about 1858. |
| Racer | 1669 | Newburyport | 1851 | Wrecked on coast of Ireland, May, 1856. |
| Radiant | 1318 | Boston | 1852 | Sold at Calcutta, 1864; wrecked, 1871. |
| Raduga | 589 | Newburyport | 1848 | As Hawaiian bk. Iolani, sunk after coll'n off S. F., May, 1900. |
| Rambler | 1119 | Medford | 1854 | Sold, early '60's, becoming German ship Fanny. |
| Rapid | 1118 | New York | 1852 | Sold, 1859, and went under Danish flag. |
| Rattler | 1121 | Rockland | 1852 | As British bk. Martha, put into S. F. in distress; condemned and broken up, 1889. |
| Raven | 630 | Somerset | 1851 | N. Y.-S. F.; condemned at Rio, 1863; sold; renamed Bessie. |
| Red Gauntlet | 1038 | Robbinstn, Me. | 1853 | Boston-Hongkong; captured by Florida, and burned, May, 1863. |
| Red Rover | 1020 | Portsmouth | 1852 | As Br. sh. Young Australia, Brisbane-England; lost, May, '72. |
| Reindeer | 806 | Boston | 1849 | Manila-San Francisco; lost near Manila, January, 1859. |
| Renown | 1025 | Newburyport | 1858 | Reported sold, 1863, to go under British flag. |
| Reporter | 1474 | Boston | 1853 | New York-San Francisco; foundered off Cape Horn, Aug., '62. |
| Resolute | 787 | New York | 1853 | Sold, 1862, and went under British flag. |
| Reynard | 1029 | Newburyport | 1856 | Sold, early '80's, becoming British bark, of Quebec. |
| Ringleader | 1156 | Medford | 1853 | Hongkong-S. F.; wrecked on the Pescadores, May, 1863. |
| Rival | 1029 | Medford | 1855 | Lost in early '70's. |
| Robin Hood | 1185 | Medford | 1854 | Burned at Bakers Island, 1869. |
| Rocket (bark) | 391 | Medford | 1851 | Sold, 1873, to go under foreign flag. |
| Roman | 774 | New York | 1842 | Hongkong-New York; foundered in North Atlantic, 1853. |
| Romance of Seas | 1782 | Boston | 1853 | From Hongkong, March, 1863, for San Francisco; missing. |
| Rovers Bride | 383 | Baltimore | 1853 | Sold in Australia, 1855. |
| S. S. Bishop | 610 | Philadelphia | 1851 | Sold, '57; renamed Grey Eagle, of Baltimore; later, bark rig'd. |
| Samuel Russell | 752 | New York | 1847 | Foochow-New York; lost on reef, Sts. of Gaspar, Jan'y, 1871. |
| San Francisco | 1000 | New York | 1853 | Lost on first voy., ent'g S. F. har., 105 ds. from N. Y., Feb., '54. |
| Sancho Panza | 695 | Medford | 1855 | Sold about 1868, becoming British sh. Nimrod; later, Ger. sh. |
| Santa Claus | 1250 | Boston | 1854 | Callao-Hamburg, aband'd Aug., '63, while mkg. for St. Thomas. |
| Saracen | 1223 | Boston | 1854 | Sold at San Francisco, 1866, becoming Italian sh. Teresa. |
| Sea King | 1166 | Boston | 1856 | S. F.-Liverpool; foundered in hurricane, September, 1862. |
| Sea Lark | 974 | | 1860 | Boston-S. F.; captured by Alabama and burned, April, 1863. |
| Seaman | 546 | Baltimore | 1850 | N. O.-Marseilles; struck by lightning and burned, Feb., 1855. |
| Seamans Bride | 750 | Belfast, Me. | 1856 | Lost on reef at Bakers Island, Mch., 1865, while loading guano. |
| Seamans Bride | 668 | Baltimore | 1851 | Sold, 1858, becoming ship Carl Staegoman, of Hamburg. |
| Sea Nymph | 1253 | Fairhaven | 1853 | N. Y.-S. F.; lost on Point Reyes, California coast, May, 1861. |
| Sea Serpent | 1337 | Portsmouth | 1850 | Sold, 1874, becoming Norwegian ship Progress. |
| Sea Witch | 907 | New York | 1845 | Hongkong-Havana, with coolies; lost near Havana, Mch., '56. |
| Shooting Star | 879 | Williamsburg, L. I. | 1851 | Orig'l name Ino; then bk.(ex.ship) Shooting Star; later, Ellen. |
| Shooting Star | 903 | Medford | 1851 | Sold, 1856, and went under Siamese flag; lost on Formosa, '69. |
| Shooting Star | 947 | | 1858 | N. Y.-Panama; captured by Chickamauga and burned, Oct., '64. |
| Sierra Nevada | 1942 | Portsmouth | 1854 | Sold, 1863; became British sh. Royal Dane; wrecked, 1877. |
| Silver Star | 1195 | Medford | 1856 | Wrecked at Jarvis Island, November, 1860. |
| Simoon | 1436 | Williamsburg, L. I. | 1852 | Sold, 1863; became Br. sh.; later became Norw. sh. Hooding. |
| Sirocco | 1131 | Baltimore | 1852 | Reported sold foreign, late '50's. |
| Skylark | 1209 | Somerset | 1853 | Sold at Hamburg, 1864; renamed Albertine. |
| Snow Squall | 742 | Portland, Me. | 1851 | N. Y.-S. F.; put into Falkland Is. in dis.; condmd.; Mch., '64. |
| Southern Cross | 938 | Boston | 1851 | West coast of Mex.-N. Y.; captured by Florida, burned, 1863. |
| Sov'gn of the Seas | 2421 | Boston | 1852 | As British ship, lost in Straits of Malacca, August, 1859. |
| Sparkling Sea | 893 | | 1857 | As U. S. transport ship, lost on Florida Reefs, January, 1863. |
| Sparkling Wave | 655 | Swansea, Mass. | 1853 | Sold at London, 1864, and went under British flag. |
| Spirit of the Times | 928 | Baltimore | 1853 | Sold, 1863; had dif. names; in 1870 was Nina of Hongkong. |
| Spitfire | 1549 | Frankfort, Me. | 1853 | Sold at London, 1863, and went under British flag. |
| Sportsman | 626 | Belfast, Me. | 1855 | Sold at Valparaiso, 1865, becoming Chilean sh. Baronesa. |
| Staffordshire | 1817 | Boston | 1851 | Liverpool-Boston; lost on Cape Sable, December, 1854. |
| Staghound | 1534 | Boston | 1850 | Sunderland-S. F.; burned off Pernambuco, October, 1861. |
| Starlight | 1153 | Boston | 1854 | Sold, 1865, becoming Peruvian ship R. Protolongo. |
| Star of Hope | 1197 | | 1855 | Liverpool-Calcutta; abandoned, sinking, June, 1861. |
| Star of the Union | 1057 | Medford | 1853 | Sold foreign, early '70's. |
| Starr King | 1170 | Newburyport | 1854 | Hongkong-Singapore; lost on Point Romania, June, 1862. |
| Sting-Ray | 800 | Greenport, L. I. | 1854 | Canton-New York; wrecked on Fire Island, January, 1856. |
| Storm King | 1400 | Chelsea | 1853 | Sold at Liverpool, 1864, and went under British flag. |
| Sultan | 1184 | | 1855 | Boston-Liverpool, May, 1862; missing. |
| Sunbeam | 988 | Medford | 1845 | Sold, 1865, and went under British flag. |

| Name | Tons | Built at | Year | Remarks |
|---|---|---|---|---|
| Sunny South | 776 | Williamsburg, L. I. | 1854 | As slaver Emanuela, of Havana, captured in Indian Ocn., 1860. |
| Sunshine | 1467 | Bath | 1856 | Sold about 1863 and became Br. sh. Anglo Indian, of Sydney. |
| Surprise | 1261 | Boston | 1850 | New York-Yokohama; wrecked near Yokohama, February, 1876. |
| Susan Howland | 1137 | Medford | 1856 | N. Y.-S. F.; burned off Pernambuco, December, 1864. |
| Swallow | 1434 | Boston | 1854 | Sold at auction, 1883. |
| Sweepstakes | 1735 | New York | 1853 | Australia-Batavia; ashore Sts. of Sunda; sold at Batavia, '62. |
| Swordfish | 1036 | New York | 1851 | Shanghai-Amoy; wrecked in Yangtse, July, 1862. |
| Syren | 1064 | Boston | 1851 | Baltimore-San Francisco; condemned at Rio, July, 1888. |
| Talisman | 1238 | Damariscotta | 1854 | New York-Shanghai; captured by Alabama; burned; June, '63. |
| Tam O'Shanter | 850 | | 1849 | Calcutta-Boston; abandoned in North Atlantic, December, 1853. |
| Telegraph | 1068 | Medford | 1851 | Partly brnd. at Savannah, '57; reblt.; contd. as Henry Brigham; later, Peruv. coolie sh. Campagnie Maritima Del Peru No. 2. |
| Thatcher Magoun | 1248 | Boston | 1856 | Sold about 1880; as Norw. sh. Hercules, lost on African coast. |
| Thomas Watson | 348 | Baltimore | 1848 | As a blockade-runner, captd. and destrd. by U. S. S. Flag, '63. |
| Tingqua | 668 | Portsmouth | 1852 | Shanghai-New York; lost on Cape Hatteras, January, 1855. |
| Tornado | 1801 | Williamsburg, L. I. | 1851 | Sold at London, '64; as Br. sh. reptd. partly brnd. at N. O., '78. |
| Torrent | 641 | Bath | 1851 | Lost on coast of Alaska, 1868. |
| Trade Wind | 2030 | New York | 1851 | Mobile-Liverp'l; foundrd. after colln. with Olympus, June, '54. |
| Tropic | 512 | Bath | 1851 | Sold about 1863, becoming British sh. Christian Mathias. |
| Tropic | 882 | Kennebunk | 1855 | Philadelphia, December, 1862 - San Francisco; missing. |
| Tsar | 470 | Newburyport | 1847 | Lost on bar, Newchang, China, 1862. |
| Twilight | 1482 | Mystic | 1857 | Sold, 1865, becoming Peruv. coolie ship Campagnie Maritima Del Peru No. 1; later resold; under name Hermann, brkn. up at San Francisco, 1877. |
| Typhoon | 1611 | Portsmouth | 1851 | Sold at Singapore, 1863, becoming British sh. Indomitable. |
| Uncle Toby | 1144 | Freeport, Me. | 1853 | Stranded on English Bank, River Plate, 1862; sold. |
| Uncowah | 988 | New York | 1856 | Sold at S. F., 1865; as Peruv. coolie sh. brnd. in China Sea, '70. |
| Undaunted | 1371 | Bath | 1853 | N. Y.-S. F.; condmd. at Rio, '63; sold; repd.; renamed Halden. |
| Union | 1012 | Baltimore | 1851 | Sold; as Fr. sh. Eugene & Adele, Mars-S. F., cond. at Rio, '72. |
| Victory | 670 | Newburyport | 1851 | Callao-Hampton Roads; lost near Cape Henry, March, 1861. |
| Viking | 1349 | Bath | 1853 | Hongkong-San Francisco; lost on coast of Japan, June, 1863. |
| Vitula | 1187 | Boston | 1855 | N. Y.-S. F.; cond. at Rio, '67; sold; repd.; renmd. Bessie Anna. |
| War Hawk | 1015 | Newburyport | 1855 | Burned at Port Discovery, Wash., April, 1883. |
| Water Witch | 900 | | 1853 | Wrecked at Ypala, West Coast of Mexico, June, 1855. |
| Waverley | 749 | Charlestown | 1853 | Coringa-Calcutta, June, 1862; missing. |
| Webfoot | 1091 | Dennis | 1856 | As. Br. bk., fm. Tacoma for Callao; bnd. off Cape Flattery, '86. |
| Western Continent | 1272 | Pembroke, Me. | 1853 | Reported sold foreign, early '70's. |
| Western Star | 841 | Medford | 1849 | Stranded at Calcutta, 1864; sold. |
| Westward Ho | 1650 | Boston | 1852 | As Peruv. coolie sh., burned in harbor of Callao, Feb., 1864. |
| West Wind | 1071 | Medford | 1853 | Sold, 1863; renamed Lord Clyde. |
| Whirlwind | 962 | Medford | 1852 | Sold in England, early '60's. |
| Whistler | 820 | Newburyport | 1853 | Melbourne-Singapore; wrecked in Bass Straits, May, 1855. |
| White Falcon | 1372 | Pittston, Me. | 1853 | Sold; as Peruv. coolie sh. Napoleon Canavero, brnd. at sea, '66. |
| White Squall | 1118 | New York | 1850 | Part. brnd., '53; reblt. as bk.; sold '56, becmg. Fr. bk. Splendide. |
| White Swallow | 1192 | Medford | 1853 | Boston-Hongkong; abandoned near Fayal, June, 1871. |
| Wide Awake | 758 | Williamsburg, L. I. | 1853 | Sold, 1857, and went under Siamese flag. |
| Wild Duck | 860 | Portsmouth | 1854 | Foochow-New York; wrecked in the River Min, fall, 1856. |
| Wild Hunter | 1080 | Dennis, Mass. | 1855 | Was bark, of Boston, 1881; not listed, 1884. |
| Wild Pigeon | 996 | Portsmouth | 1851 | In '63, Br. sh.; in '65, Span. sh. Bella Juana; later was Span. sh. Voladora; abandoned in No. Atlantic, Feb., 1892. |
| Wild Ranger | 1044 | Medford | 1853 | Sold by court, a/c colln. with Coleroon, '62; renmd. Ocean Chief. |
| Wild Rover | 1035 | Damariscotta | 1853 | Reported lost, about 1870; no particulars available. |
| Wild Wave | 1547 | Richmond, Me. | 1854 | S. F.-Valparaiso; wrecked on Oeno Is., So. Pac., March, 1858. |
| Windward | 818 | Bath | 1853 | As bark, Seattle for S. F.; stranded on Whidby Is., Dec. 30, '75. |
| Winged Arrow | 1052 | Boston | 1852 | Sold at San Francisco, 1868, and went under Russian flag. |
| Winged Racer | 1767 | Boston | 1852 | Manila-New York; captured by Alabama and burned, Nov., '63. |
| Wings of the Mng. | 915 | Waldboro | 1853 | Sold, 1857, and went under French flag, as Surate. |
| Wisconsin | 952 | New York | 1847 | Sold, bcmg. Arg. sh. Carlos; later was Ch. sh. Elvira Alvarez. |
| Witchcraft | 1310 | Chelsea | 1850 | Callao-Baltimore; wrecked near Cape Hatteras, April, 1861. |
| Witch of the Wave | 1494 | Portsmouth | 1851 | Sold in Holland, 1856, becoming Electra, of Amsterdam. |
| Witch of the Wave | 1198 | Portsmouth | 1856 | Sold at Hamburg, 1874, and went under German flag. |
| Wizard | 1601 | Boston | 1852 | Sold, 1862, bcmg. Br. sh. Queen of the Colonies; reptd. lost, '74. |
| Wizard King | 1398 | Richmond, Me. | 1854 | Sold, 1865, becoming British ship Munsoory. |
| Young America | 1961 | New York | 1853 | Sold, '84, bcmg. Aus. sh. Miroslav; Phila.-Fiume, msg., Mch., '93. |
| Young Mechanic | 1375 | Rockland, Me. | 1854 | Boston-Hongkong; burned in South Atlantic, March, 1866. |
| Zephyr | 1184 | Chelsea | 1854 | Sold about 1870 and went under British flag. |

# RIVER TERMINALS AND WATER DEPTHS

## Utilization of Rivers is Best Means to Persuade Federal Government to Provide Greater Depths. Success of Europe Points the Way

By H. McL. HARDING
Designing Terminal Engineer, City of Natchez, Mississippi

RIVER terminals are designed in accordance with the expected volume of traffic. The larger terminals are generally situated on the lower portions of the river where ocean navigation ends and where the deeper water is; and the smaller along the upper stretches where the depth of water is the minimum for freight navigation.

There is, however, a large and profitable field for transportation of freight far inland by small barges. To achieve the most satisfactory results from this freight service, there should be a permanent and maintained depth of from six to nine feet. Nothing should be left undone to obtain from every source the desired depth. This, however, does not mean, if due to the refusal of the government to do the dredging or because the river bed is partially composed of solid rock and the six to nine feet cannot be obtained for many years to come, that important cities or communities will during a long period be deprived of the great advantages of water transportation.

### Use Entails Improvement

It has been said if navigation lines be started on a less depth that the Federal government will not then think it necessary to dredge deeper. Exactly opposite is the case, for if the government sees that the river, though quite shallow, is being extensively utilized, it will the more readily and quickly assist in providing a deeper channel and maintaining it; in fact, acts of Congress have instructed the Army engineers to help those cities which are trying to help themselves. This is the law. If there be apathy, or a neglect as to water-borne commerce in the community, then there will be little encouragement for Washington to improve their waterways. The incentive to action by the government must come from the states, cities or sections to be benefited. This emphasizes where the initiative must originate. The government is not hunting for rivers to be dredged. All the river cities are benefited by the development of the upper stretches.

What will be the minimum depth of a waterway that will be a commercial success—that is, which will pay? This, perhaps, would be a difficult question to answer were it not that there are valuable statistics as to what has been accomplished under similar conditions with shallow draft towboats and barges in Europe and other foreign countries. The dimensions of power boats and barges derived from government reports are herein quoted.

### Towed Barges Best

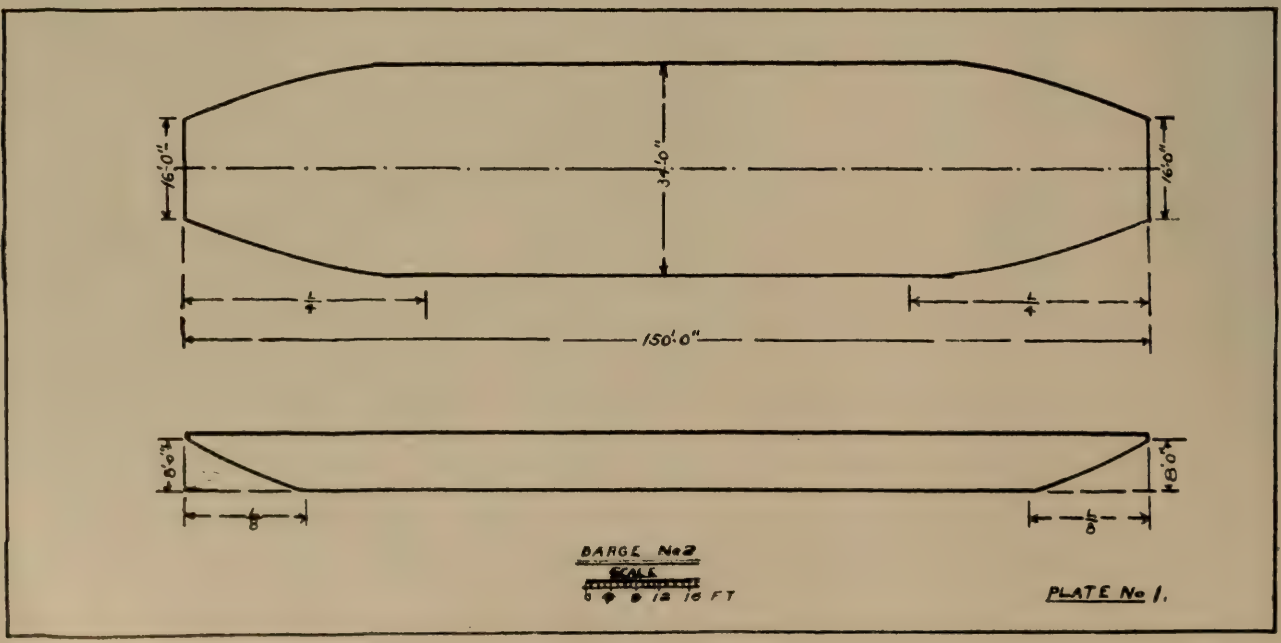
The types of small river boats and the character of the traffic often are the determining factors in attaining success. Without giving the details, it may be asserted that for river craft of shallow draft, towed barges for freight will prove the most profitable; not, however, as a general rule, self-propelled barges, but power boats and towed or pushed barges. On account of the small draft possible the power boats should not carry cargo.

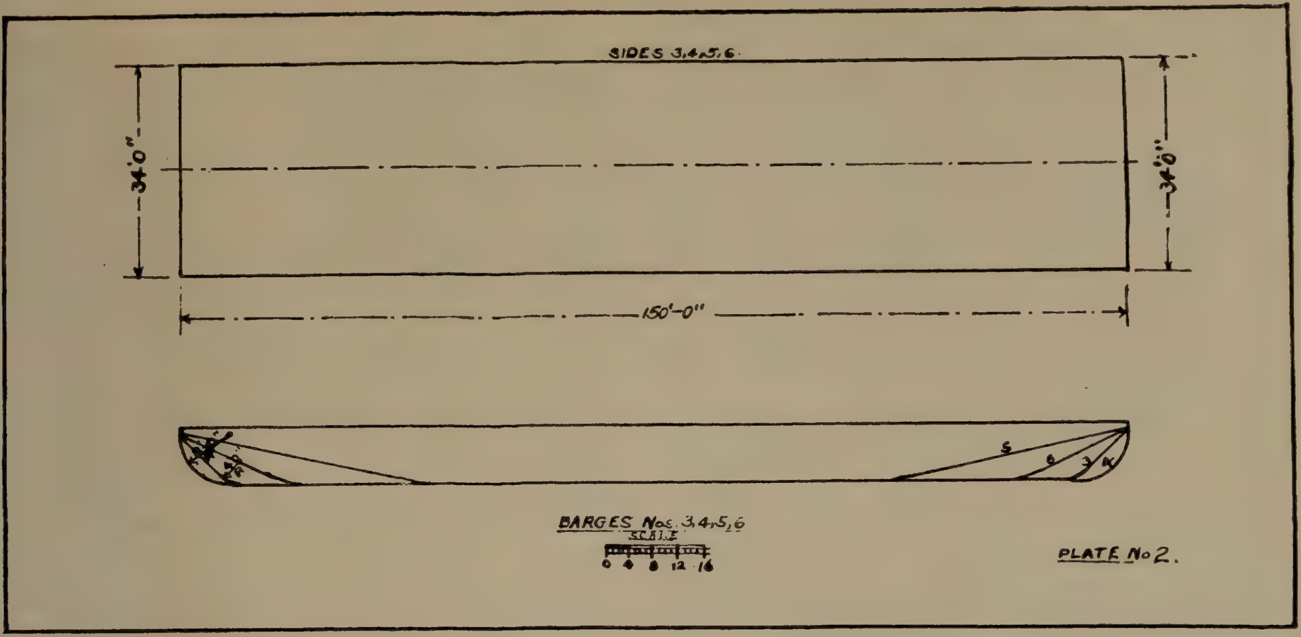
For the whole season, with rail competition, the income, both gross and net, will exceed that from passenger traffic. From two-thirds to three-fourths of the gross income of rail traffic is derived from freight.

It has been stated, because there are on the average more inhabitants a square mile in Europe (290 a square mile in Germany and 63 on the Mississippi from Cairo to the Gulf), that this is the reason for the wonderful success of water traffic on European rivers. As it is the freight traffic that pays, the potential income from the possible freight tonnage should be the criterion of value.

### Immense Tributary Areas

More important is the area from which freight traffis is drawn. If this is taken into account, the volume of the combined products of the factories, the farms and the mines in the United States will be found to be in excess of that possible from the restricted dis-





tricts of the Rhine, the Rhone, the Elbe and the Danube. To an inland terminal in Texas, 52 miles from the Gulf, freight is drawn from Illinois, Iowa and from sections near the Canadian line. Probably this drawing distance is at least five times that for the European water-borne commerce and the area at least ten times as great.

A navigation line on a shallow river using barges having a low freeboard would for the season prove a profitable investment where the high, many-decked packet has been a failure. Barges offer less wind resistance than the packets and are more easily controlled.

With a permanently maintained channel of a depth from two feet six inches to three feet, and there being a tonnage proportional to the capacity of the barges, an inland navigation company can be a success. Besides the barges being designed for the expected service, there must also be correctly located and planned terminals where, by mechanical appliances, barges can be loaded and discharged with great rapidity, there being only one direct movement of each draft between vessel and shore.

### Shallow Depths Easier to Maintain

It is far easier to maintain a depth of between 2 and 3 feet than one of 6 feet. Government engineers would not be so averse to recommending the maintenance of the former depth as the latter. Loaded steel barges towed in fleets may draw about 2 feet 6 inches. The width may be 23 feet and the length 125 to 150 feet. Such barges should be so designed that freight can be lifted from or deposited in the barges by traveling gantry cranes with one vertical movement. Such may be said to be the almost universal mechanical method of operation in Europe.

The towboats and barges do not carry passengers.

The following dimensions and capacities of the smaller towboats and barges are selected from government reports:

Elbe River Towboats: length, 210 feet; beam, 23 feet; draft, 2 feet 1 inch; indicated horsepower, 450.

Rhine Power Boats: length, 150 feet; beam, 22 feet; draft, 1 foot 7 inches; tonnage towed, 2100 tons. Another type is: length, 150 feet; width, 22 feet; draft, 1 foot 8 inches.

Rhine Barges Towed (government report): The hulls are of steel sub-divided into several compartments by transverse bulkheads, the longitudinal length being sufficient to permit any sequence of loading. The hatch runs almost the full length of the barge, and covers the entire width except for a narrow runway along the gunwale. The coaming is about 2 feet high and the slope of the hatch cover is from 2 to 3 feet in the half width of the boat. The covers generally run athwartship and are about three planks to the section.

### Some Other European Types

Elbe Barges: There are here wooden hull barges. Some barges have steel sides, are flat and have wooden bottoms. On the Danube, Seine, Spree and Havel, there are many points of barge similarity between these and those of the Rhine and Elbe, especially in regard to free vertical movements in the discharging and loading.

On the Rhone River there are small barges, length 183 feet, beam 25 feet, draft (light) 11 inches; capacity 325 tons. The load is adapted to the depth of the river.

Barge Capacity: Diagrams can be furnished of four types of barges designated 1, 2, 3, 4, each of a length of 150 feet and width of 34 feet. The drafts of Nos. 2 and 4 with different loadings are also shown from curves in another plate. It is shown from these curves that it is possible to transfer 150 tons at a draft between 2 and 3 feet, and 100 tons at a draft a little below 2 feet. The smaller barges are for navigating the shallow tributary rivers and act as feeders to the main river artery.

The economical speed for upstream towing is 50 per cent greater than the velocity of the stream.

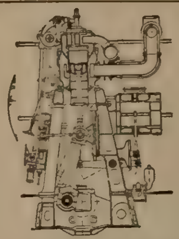
The following are the dimensions of the larger Oder River towboats: length, 170 feet 10 inches; beam, 26 feet 3 inches; draft, 2 feet 11 inches; indicated horsepower, 600. Length, 172 feet, beam 26 feet 3 inches; draft, 2 feet 11½ inches, indicated horsepower, 550.

Small Russian River Towboats: length, 150 feet; beam, 22 feet; draft, 1 foot 7 inches. Length 150 feet, beam 22 feet, draft 1 foot 8 inches. Tonnage towed, 2100 tons.

The above figures are sufficient to show that a fleet of barges can be towed by power boats, neither towboats or barges drawing more than 2 feet 6 inches. The above figures are derived from actual examples.

Fleets of small barges can penerate far inland, and if economically operated will prove a good investment on upper stretches of rivers where today there are no transportation facilities. There are many examples to follow in many European countries.

# Oil Engines and Motorships



## CAPITAL CHARGES ON MOTORSHIPS

### Failure to Invest in Propelling Equipment so as to Assure Ability to Compete with Vessels So Equipped Threatens Ruin

By EDWARD B. POLLISTER

THERE are business enterprises that it is possible to get in during good times and out before bad times; but no great shipping business will be built up on this basis. The important thing for the shipowner is to be able to hang on when times are bad.

W. A. Harriman, chairman of the board of directors of the American Ship & Commerce Corporation, in a recent address, brought out the point that a large proportion of "fixed charges" on ships could be allowed to accumulate in dull times to be cared for during good times.

The greatest single factor delaying the adoption of the motorship by the American merchant marine is the excess cost of the motorship and the general feeling against increased investment on the part of shipbuilders, marine engineers, naval architects and shipowners, so well expressed by the phrase, "capital charges will be always with us". The ever-increasing competition of foreign motorships will soon bring home this truism as applying especially to steamships, which are tied up because they are unable to compete.

### Cargo Vessel Operation

Considering a business venture of a cargo vessel costing $1,000,000 and operating in world commerce, the success of the venture, good management and full protection against hazards being conceded, depends primarily on keeping her in profitable service a sufficient period during her normal life for the excess of freight receipts over operating expenses to yield the million dollars invested, plus an adequate return on the investment for this period; or the disposal of the vessel at some time during her career on a basis which would return the original investment plus a profit. In competing with the maritime nations of the world, the earnings of the vessel are subject to vicissitudes of war and peace, trade conditions that are booming or stagnant, legislative restrictions which may be confiscatory, and rates and advantages offered by ships improved in design, operating economy and speed, developed during the period of the normal life of the vessel. Every ship launched must expect, during her normal life, to face periods of trade depression which will tax the business ability of her operators to keep her in continuous profitable operation.

Although the earnings during times of great mercantile prosperity are the greatest factor in the success of the venture, the safety of the investment depends on, and the maximum earnings will accrue directly proportional to, the time the ship is at sea, carrying profitable cargo and inversely as the ship is laid up, idle, or operating without profit. Fixed charges of 15 per cent on a million dollar vessel amount to $150,000 annually, to which must be added the port charges if the vessel is laid up.

### A Tramp Motorship

The skipper of a tramp motorhip which recently loaded a $75,000 freight of case oil at a Texas port for China at a freight rate of about $9 a ton, gave me his opinion of the advantages of the motorship in a conversation which was about as follows:

"Skipper, why is it that a Scandinavian vessel is carrying a full load of American bulk cargo from an American port to Hongkong at a time when freights are hard to get?"

"The Scandinavians know the shipping game better than Americans."

"Do you like the motorship better than the steamer?"

"No, I am too old and have been too long in the shipping game to like any new type of vessel, but I would rather be master of a motorship, because with a motorship I can lick the whey out of any steamer I run across in any part of the world."

"On account of the fuel economy?"

"That's only a small part of the advantage of a motorship over a steamer. I arrived from Hamburg in ballast, and my ship was too high out of water to utilize the freight handling equipment at this dock; and accordingly had to load a large part of the cargo with stevedores, delaying me nearly ten days. During this time in port, the fuel consumption has only been .6 ton of oil as against 6 tons for a steamer, with far less standby loss. Additional cost for the steamer, 5.4 tons at $7.80, 15 days, $630.

"This motorship of 9000 tons deadweight capacity, including bunker fuel, burns 9½ tons of oil a day, as against 30 tons a day for a corresponding steamer while at sea.

### No Call at Honolulu

"I have an opportunity of filling my ship with cargo at $9 a ton. Burning only 9½ tons a day at 11 knots, the 39-day run to Hongkong requires 370 tons of bunker fuel. Allowing 25 per cent reserve, I can take on 465 tons of fuel and 8535 tons of freight.

"If I had a steamer, I should have to reserve bunker capacity for the longest leg of the voyage, which would be Honolulu to Hongkong, a distance of 4900 miles; say 19 days, 30 tons of fuel per day, 570 tons burned, plus reserve of 25 per cent or a minimum bunker fuel of 715 tons. The maximum cargo I could load on a steamer would be 8285 tons, 250 tons less than the motorship, which corresponds to $2250 more freight money. When I get through the canal, I will set a course straight for Hongkong, whereas with the steamer, I would have to deviate and lose a day going to Honolulu for fuel. The port charges at Honolulu, including towing and pilot, would be about $250, in addition to the cost of operating the ship and the fixed charges on the investment for an extra day, which amounts to about $550. For the 39-day run, the motorship cost for fuel will be $2885. The steamer will burn 600 tons of Port Arthur fuel at $7.80, and 570 tons of Honolulu fuel at $14; total, $12,660, or $9775 in excess of the motorship.

### Low Costs While in Port

"My destination is a port near Hongkong, China, where modern dock equipment will probably not be available for unloading, and about 15 days will be required for discharging the cargo, but with a fuel consumption per day of only .6 ton as against 6 tons for the steamer. The same applies to loading any available freight. Allowing a total of 15 days discharging and loading freight at China ports, excess fuel consumption for the steamer would be 81 tons, at $17.85 (Hongkong fuel), or $1445.

"When I get to China, I will find a lot of steamers lying at anchor waiting for profitable cargoes. With the greater sailing radius of the motorship I can afford to take cargoes offered for ports where fuel is not available except at very high prices; furthermore, I can underbid any of the steamers for freights for a return voyage back to the United States, and need less freight to pay operating expenses. With my low operating cost I can afford to move around in the Orient and pick up small freights that would be unprofitable for a steamer.

### The Return Voyage

"For the return voyage to the United States, the motorship would require 370 tons of Hongkong fuel, at $17.85, costing $6600, as against a steamer requiring 570 tons of Hongkong fuel at $17.85 and 600 tons of Honolulu fuel at $14, a total of $18,600; a difference in favor of the motorship of $12,000. The port charges for fueling at Honolulu, and the additional day required, would be another $750 expense for the steamer.

"Without allowing fixed charges for the longer stay of the steamer in the Orient, waiting for return profitable cargo (and I can keep this motorship at sea carrying profitable freights a great many days more per year than I can a steamer), the motorship has an advantage in operating expenses for this one voyage of 103 days (105 days for the steamer) of $27,700."

## TABULATION OF ADVANTAGES OF MOTORSHIP

| | |
|---|---|
| Motorship additional freight earnings outbound | $ 2,250 |
| Steamer excess cost port fuel, loading | 630 |
| Extra day for steamer calling at Honolulu for fuel (operating and fixed charges) | 550 |
| Steamer port charges, Honolulu | 250 |
| Steamer excess cost fuel, outbound | 9,775 |
| Steamer excess cost port fuel, China disch'g | 1,445 |
| Steamer excess cost fuel, homeward bound | 12,000 |
| Steamer extra day calling at Honolulu for fuel (operating and fixed charges) | 550 |
| Steamer port charges, Honolulu | 250 |
| Total | $27,700 |

A glance at these items in favor of the motorship as tabulated above shows the fallacy of the usual method used by owners of steamers in estimating motorship economy.

## MOTORSHIP ECONOMY AS USUALLY ESTIMATED BY STEAMSHIP OWNERS

Texas to China: turnaround, 105 days; at sea, 75 days; in port, 30 days.

| **Fuel consumption** | **Steamer** | **Motorship** |
|---|---|---|
| In port, tons | 6 | .6 |
| At sea, tons | 30 | 9.5 |
| **Cost of fuel** | | |
| Per ton (say) | $10 | $10. |
| 75 days at sea, tons | 2,250 | 712.5 |
| 30 days in port, tons | 180 | 18 |
| Total fuel cost | 24,300 | 7,305 |
| Additional expense for steamer | | $16,995 |

This saving of $27,700 is at the annual rate of $98,000 greater operating expenses of the steamer over the motorship, a differential which results in the motorship being kept operating while the steamer is laid up during dull periods, which may last two or three years. When freights are plentiful, this difference in operating expenses increases directly the net earnings of the motorship. Based on 15 per cent "fixed charges," $650,000 additional capital investment in the motorship would be justified; whereas the actual cost of the motorship is only about $200,000 more than the cost of the steamer.

### Steamer Values Driven Down

But the obsolescence of the steamer is greater than that of the motorship (due to the advent of the motorship), which has assisted in driving the price of steamers down to prevailing quotations of $30 per deadweight ton during these dull times in the shipping game. A going motorship two or three years old, was recently offered in the European market at about $70 per ton.

The slump in the price of steamers, undoubtedly due to a considerable extent to the more general adoption of the motorship, raises the question: what will be the future value of a steamship with the increase in motorships on the high seas. Recent sales at scrap prices of shipyards and manufacturing plants representing excess capacity built to meet production rate during war times indicate that the sales value of a ship is likely to be gauged either on probable net earnings or scrap value. Seventy thousand dollars' worth of steel fabricated into a ship's hull at an expense of $140,000 will not produce a sales value of $210,000 unless the completed vessel has an earning capacity which will show a profitable return on such a valuation.

### More Motorships in Prospect

For certain routes, and for special trade requirements, the steamer will undoubtedly be used for many years to come; but the diesel-engine shop capacity, which has been so greatly extended during the past two or three years in Europe, will during the next few years result in accelerated advances in the amount of motorship tonnage on the high seas. This will menace a large amount of capital invested in steamships. Investment in economical equipment which tends to increase assured earnings may be a matter of judgment. But failure to invest sufficient capital in modern propelling equipment to assure profitable operation in competition with any considerable number of ships so equipped introduces a hazard which threatens the success of the venture and heavy loss of capital.

To the steamer left waiting in the Orient for profitable return cargoes, because of fuel purchased in ports where it is dear, and not to the motorship usually carrying cheap bunker fuel for the turnaround, should be applied the time-worn expression that is holding back the development of the American motorship: "capital charges will be always with us."

# A REPLY TO MR. LUCAS

The Editor, Pacific Marine Review:

The article in your June issue, contributed by Mr. Theodore Lucas, and entitled "The Commercial Aspect of the Oil Engine," is considered inaccurate and decidedly misleading. This is particularly so in reference to the tabulated figures given at the end of the article showing comparative weights and costs of various installations.

The author appears to have built up his comparisons around the Burmeister & Wain installation in the motorship William Penn, whose main engines are designed for 4500 diesel I. H. P., or 3500 S. H. P. equivalent, being the same as installed in the motorship Californian.

The weight of machinery—i. e., 911 tons—as given for the William Penn is correct, being taken from a paper read by the writer last year before the spring meeting of the Society of Naval Architects and Marine Engineers. It should be pointed out here, however, that this weight is actual and very complete, containing certain items often not included, and particularly in the machinery estimates of the strictly engine builders.

The weight of the triple-expansion steam installation, which presumably has Scotch boilers, is on the heavy side, evidently due to the author using the same I. H. P. for the steam as for the diesel, or not making any allowance for the higher mechanical efficiency of the steam engine.

The weights for the last three installations, designated as Items IIIa, IIIb, IIIc, are wrong, on account of the mistakes of the author in his basic technical assumptions, as will be shown.

For Condition IIIa (and which apparently applies to the last two), it is noted that it is proposed to drive the single screw at the same speed of revolutions as the two screws of the twin-screw motorship, but which is totally at variance with established marine practice. The propeller for the single-screw vessel, for the particular size and speed of vessel implied, should not exceed 75 R. P. M. if a desirable propulsive efficiency is to be attained and comparable with that of the twin-screw vessel. The weights accordingly as given for the last three conditions are too small, due to this error in taking too high R. P. M. and which discredits the cost figures in connection with same. For the last three installations, also, the author proposes the use of a type of solid injection double two-cycle engine, evidently untried and of his own design and theoretical, and as such not justly comparable with the well-proven design of many years as in the motorship William Penn.

The author, furthermore, has overlooked the 15 per cent additional losses involved with the electric transmission over that of the geared drive, in that he proposes the same high speed engines for either case.

In reference to the cost given, Mr. Lucas has arrived at this, it will be noted, by using some round figures on a ton weight basis, evidently of his own choosing. The total costs thus arrived at are also very indefinite, as it is not stated whether these are taken as production costs, or cost to the owner or purchaser, and if the cost of installation of the machinery is to be considered as included.

The cost given for the William Penn's installation is very close to the purchase price paid by the Shipping Board to Messrs. Burmeister & Wain. This machinery, however, as is well known, was built under war conditions, being contracted for in January, 1919, and accordingly is not to be taken as any criterion for similar cost at the present time.

Comparing the cost of the motorship William Penn's machinery, as given in the article, with the same for the steamer, it is seen that the diesel installation is about 70 per cent more. This does not agree with the latest estimates of the Cramp company, builders of Burmeister & Wain type of motorships, which shows that the cost of the diesel plant is only 43 per cent more than the equivalent reciprocating steam, and, furthermore, this can be reduced to 33 per cent when placed on a larger production basis.

The author refers to the desirability of using the asphaltic oils of as low as 16 degrees Baume (.959 gravity) for diesel engines for putting the motorship on a parity with the steamer for bunkering at the various world supply stations. It should not be forgotten, however, that the motorship will always be more independent of supply stations than the steamer, due to its very much greater economy, and can accordingly choose the oil most suitable for its use and at prices most favorable in the world's market. Taking everything into consideration, there is not enough spread in the price of fuel oil at the present time between 16 degrees Baume and, say, 19 to 24 degrees Baume, the latter being commonly used in marine diesel engines without preheating, to justify using the heavier oil. It has been repeatedly shown that oil of 16 degrees Baume can be used successfully in the present air-injection engine, provided it is heated sufficiently on entering the fuel valves for reducing the viscosity to that required for complete atomization. This, however, requires starting up and shutting down with a lighter oil, which, in conjunction with the heating devices, much complicates operation, and is hardly justified under present conditions.

It is noted that the author has repeatedly referred to the desirability of making use of American engineering originality in developing an oil engine along our own lines to suit native fuels and conditions. As for the necessity for having specialized engines for burning our native fuels, it is observed that foreign motorships, with foreign engines, have a strong preference for our oils, making a special point of bunkering with same when calling at our ports. Nor does the oil engine require any special development along lines to suit particular national conditions. The situation is identical to the development of the marine engine and steam turbine, which have been standardized along broad lines dictated by the accumulated experiences of all countries interested in maritime work. The diesel engine, unfortunately for Mr. Lucas' suggestion, has been already very highly developed by the foreigners due to our slow entry into the field. It is therefore decidedly to the benefit of all concerned that we avail ourselves of their experience instead of trying to follow some radical lines of development of our own, which in the past, by their failures, have done much to discredit the more universal adoption of the motorship in this country.

The article under criticism is considered an excellent example of the kind that too frequently adorn our technical papers and which only serve to mislead those looking for information.

J. C. SHAW,  
The William Cramp & Sons Ship & Engine  
Building Company.

# THE DIESEL IDEA

## A Declaration of Editorial Creed Thereon

WE have often been asked by our old marine engineering friends why it is that we devote so much space in Pacific Marine Review to "Oil Engines and Motorships" when such a large proportion of the world's merchant tonnage is now, and probably for some years to come will be, propelled by steam power. Because of this inquiry and for the reason that in this department of Pacific Marine Review there frequently appear articles that seem to some of our friends so progressive as to be almost Bolshevistic in tone, it seems pertinent at this juncture to analyze our motives and declare our editorial creed for this trade journal insofar as marine engineering is concerned.

We believe that it is the duty of a technical journal to keep a few jumps ahead of ordinary practice in its particular field so that its readers may be inspired by frequent suggestions of improvement in their work. There are impinging on the editorial staffs of all technical journals many forces that tend to check this ideal of the "forward look". Commercial "standpatism" in all branches of engineering is constantly invading even the sacred precincts of the great national societies.

The sales engineer, whose name is legion, is forever on the publicity job, and his copy takes precedence because of the "bread and butter" angle which of necessity is always present in the publishing business. And of course it is quite right and proper that the commercial successes and practical achievements of our shipbuilding and marine engineering firms, large and small, should find ample space, as they do, for descriptive copy in the columns of the National Magazine of Shipping. Over against this commercial status quo influence there is the work of the investigating scientist and the research engineer, and it is from this work that the editor, in his efforts to preserve the forward-looking ideal, gets the greatest inspiration and help both for himself and for his readers. So we believe in the greatest possible publicity for the results of such work.

We also believe that no development during the last fifty years has been so productive of constructive original marine engineering work as the diesel idea. Its reaction on the work of marine steam engineers alone should give it ample place in the inventors' Hall of Fame, and now, notwithstanding the improvements brought about in marine steam practice, the diesel idea is still threatening to supplant steam entirely in marine power plants.

The practical application of the high powered oil engine to marine propulsion is still in its formative stage, a decided practical success but not by any means a standardized practice. Many improvements are possible. There is much of suggestion from inventors and from practical engineers. We have already seen in our varied editorial experience suggestions for changes in oil engine design that were put forward with fear and trembling grow into the most amazing practical results.

We are always mindful, too, that the novel suggestions and new designs brought in to us are often the results of many "long days of labor and nights devoid of ease"—constitute in deepest measure the very life of the individual in whose brain they were born. So it seems to us that giving publicity to such suggestions and ideas is the most valuable service that can be rendered to its readers by the editorial staff of a technical journal. In fact, aside from the routine news and advertising value, this forward-looking or prophetic service is the only real justification for our existence.

All this being our creed, we wish to state that we do not agree with the writer of the letter that appears on the facing page. Had we considered the article in question misleading, we would not have had it published. There may be some difference of opinion about the accuracy of the figures used, but the whole tone and motif of the article is leading, not "misleading", and that is just the reason for its publication.

Throughout the nineteenth century the constant endeavor of forward-looking marine engineers was directed toward safe reduction in weight of steam plant. The close of that century saw the birth of the diesel idea and almost simultaneously the application of the steam turbine to marine propulsion. The weight and space advantage of geared steam turbine propelling units is one of the great obstacles to the more universal application of the more economical diesel. Any suggestions, therefore, that will tend toward safe weight and space reduction for marine diesel plants should be welcome to marine engineers and are very proper material for technical articles in marine trade journals.

In the future development of motorship engineering we may see changes as revolutionary as those brought about in steam marine engineering by the introduction of the turbine. It may be that experiments now being made with high pressures and superheats will lead us back to the good old reciprocating steam engine; it may be the combination of internal combustion and steam in the same engine; it may be the compounding of the diesel; or it may be the internal combustion turbine. There are so many possibilities, so much room for improvement in the transformation and transmission of energy as applied to marine propulsion and to all other classes of motive energy, that it behooves all marine engineers to look upon new suggestions, ideas and designs with an open mind.

# STABILITY OF LARGE SHIPS*

By SIR JOHN H. BILES, K.C.I.E., LL.D., D.Sc.

### Leading British Authority Discusses with the Institute Some of the More Important Characteristics Affecting Seaworthiness

SHIPS of very large size of many nations are not uncommon, and the question of their stability is one of great interest to the passenger and the naval architect. It is with a view to promoting a discussion on this subject that the following remarks are made.

### Stability of a Ship on Entering or Leaving Port

Before the contracts for some new ships were placed, my advice was asked as to the amount of G. M. (metacentric height) which should be provided for in the light condition. I suggested 1 foot as a proper amount —not that a less amount would not have been satisfactory, but that experience had shown that during the process of building additions were likely to be made which would tend to reduce the amount in that condition. Many ships have G. M. in the light condition zero or negative, and are satisfactorily worked. Obviously, the reliable method of determining the sufficiency of the stability of a ship is to compare the amount which she may have in any condition in which she is likely to be with that which satisfactory ships doing the same kind of work actually have. The recognized method of comparison is to find the G. M. in two conditions—first, the load condition, i. e., with coal, stores, passengers, baggage, mails, fresh water and cargo all on board. This corresponds to the state the ship will be in at the beginning of a voyage. The second is the arrival condition, in which coal, store and fresh water have been nearly all consumed, and such water ballast added as may be found by experience sufficient to enable the ship to be satisfactorily worked. There is no doubt about the weights of any of the things carried in the ship, except the cargo, which is of such varied character and quality that it is difficult to predict what its weight will be before it comes alongside the ship, and is not easy to determine even when it is there. The recognized method of allowing for cargo weights is to assume that they will be sufficient to load the vessel to her load water-line, and that the center of gravity of the weight will be at the center of gravity of the volume of the compartments of the ship which are devoted to cargo. Upon this assumption the G. M., in both leaving and arriving conditions, can be determined. The assumption is believed generally to be on the safe side, because it is the general practice, where cargoes are varied in character, to put those of the heavier kind below. It is also frequently found in practice that general cargoes do not fill the cargo spaces, as the parts vary in size so much that it is quite impracticable to fill the spaces up to the beams. The consequence is that the centers of gravity of the cargo in the different compartments are all below the centers of the spaces, and the center of gravity of the ship and cargo is lower than the calculation shows.

### Departing and Arriving Conditions

Judged by this method, it may be found that a projected ship has as much or more G. M. in the load condition as many other large steamers. In the arriving condition there may be special conditions in the ports of arrival that make comparison with steamers other than those trading to that port of little value. In some cases the margin of draught is so little that a small inclination of the ship will cause an increase of draught sufficient to cause her to touch the ground at the bilge. To determine the minimum amount of stability it is necessary to know to what angles similar ships heel in entering the port; what their arriving daughts are; what amount of increase of draught is associated with definite angles of heel. Such information is not always available, but it is desirable that it should be obtained, and the results interpreted.

It is, however, of interest to compare the two conditions of the ship in which she will have to be when leaving and arriving in port. They are: (1) the fully laden condition when leaving, and (2) the arriving condition after having crossed the ocean. The most unfavorable condition on leaving port, so far as liability to touch the bottom is concerned, is that when the ship is fully laden and is loaded with a cargo which will, in addition to filling the ordinary hold spaces, also fill the portable passenger spaces which may be used for cargo and the reserve bunker with cargo if this is so used. A special case has been taken by way of illustration. In this condition, which we may call (1), the vessel will leave with a G. M. of, say, 2.2 feet. If the ship does not incline, the draught at which she leaves the wharf will be the maximum draught which we need consider, and it may further be noted that in the case chosen a heel of 2 degrees on either side will not increase the draught, but for every additional 1 degree of heel the draught will be increased by about 6 inches. In the case of the ship arriving at the port, there are two conditions, (2), when the ship arrives with a cargo of about 2000 tons' weight, and with about 1000 tons of coal in the bunkers. In this condition the ship will have a draught of 26 feet 3 inches and a G. M. of 1.8 feet. The other unfavorable condition, (3), is when she arrives with a small quantity of cargo, say, about 700 tons, in which case she will have a draught of 24 feet 10 inches and a G. M. of 1.3 feet. Whatever the disturbing cause may be which heels the ship, we can compare the relative effects in these three cases, (1), (2) and (3), and though the information may not be available to say to what angle the ship will heel, it can be seen what are the relative effects upon the increase of draught, due to any assumed disturbing cause.

### The Use of Ballast

The following table shows the degrees of inclination and actual draughts for the three conditions, (1), (2) and (3), due to a series of disturbing causes, which in succession will heel the ship in condition (1) to the number of degrees named in the column headed (1). The number of degrees in the columns headed (2) and (3) are the corresponding inclinations that the ships will have for the same disturbing causes:

| | (1) | (2) | (3) |
|---|---|---|---|
| Degrees of inclination | 5.0 | 6.0 | 8.4 |
| Draught in feet | 30.1 | 28.3 | 28.1 |
| Degrees of inclination | 10.0 | 12.0 | 16.8 |
| Draught in feet | 32.7 | 31.5 | 32.5 |
| Degrees of inclination | 13.0 | 15.6 | 20.0 |
| Draught in feet | 34.2 | 33.3 | 34.2 |

From this table it will be seen that in all cases the draught of the ship arriving is not more than that of the ship leaving.

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* Paper read at the Paris summer meetings of the sixty-third session of the Institution of Naval Architects, July 5.

Even in the case where the ship is inclined to the greatest angle, that of the ship leaving port is not less than the others.

It seems unlikely that there can be disturbing causes which could give the ship so much heel, because, if there were, other ships would have been heeled to similar angles, and their draughts would have been increased by about the same amount. If they had been, these vessels would have touched the bottom, and the case of the chosen vessel would be no worse than has been the case with them. If they have not touched, then the disturbing cause sufficient to make them touch cannot exist, but in none of the cases does it appear that any advantage would be gained in endeavoring to increase the stability of the ship by adding ballast to the ship or in any other way to avoid touching the bottom. The draught would be increased by the amount of the ballast, and in practically all cases the ship in the arriving condition is safer from touching than the ship in the leaving condition. It does not, therefore, seem to be desirable in the instance chosen to add ballast to the ship on account of the port conditions. Each case may have to be investigated on its merits, but a similar method of investigation should be followed.

### Effect on Passengers

The only other question which need be considered in the matter of the stability is that of the heeling of the ship, due to the action of the rudder, when she is in smooth water, and the effect that this heeling will have upon the minds of the passengers. No heeling is likely to be produced which can be dangerous to the ship. But a tender ship arriving in port is very likely to have heeling and oscillations set up under rudder action. There is no doubt that some passengers do not understand why a ship should incline and oscillate in smooth water, but oscillation by itself has no terrors for them, because when at sea in comparatively smooth water and with some small swell on, the vessel will roll for days to degrees of inclination of about an average of 5 degrees, with a maximum of 10 degrees, and the passengers take no notice of it. It seems, therefore, difficult to believe that anyone will be deterred from crossing in a ship on account of the tendency to roll in smooth water, under the rudder action, but the reputation of a ship for stability has to be carefully guarded, and it may be worth while to err on the side of large rather than small G. M. to avoid throwing doubt on a vessel's stability.

If the chosen vessel is in no respect different from other ships of the same class, and there has never been any question as to the safety of such ships at sea, with a G. M. as small as the chosen vessel is likely to have, no water ballast need be added to prevent the vessel from touching when rolling during entering port. It seems, therefore, desirable, before adding water ballast, to very carefully consider the above facts and arguments, and to gain further experience with the ship, before attempting to reduce her draught in the inclined condition by adding water ballast when entering port.

### Stability of a Ship at Sea

The stability of a ship at sea may be considered from two points of view—first, safety; second, comfort of passengers.

Safety.—By this is meant freedom from liability to capsize. The tendency to return to the upright is the measure of the stability. The causes which move the ship from the upright are (a) the action of the sea, (b) the action of the wind, (c) the shifting of weights inside the ship so that the center of gravity of the whole ship and her loading are not on the middle line, and (d) the action of the rudder, about which it is not proposed to say more.

(a) The action of the sea.—This produces rolling when the sea is not directly ahead. The worst case of rolling is when the period of the waves and the natural period of the rolling of the ship are nearly the same. The natural period of rolling of a ship is what she would have if inclined to some appreciable angle in still water and released from it and allowed to oscillate. The period of the largest Atlantic ocean waves, those of 500 feet to 600 feet long, is 10 to 11 seconds. The period of a complete oscillation of a large Atlantic liner is about 20 seconds. The period of a ship varies as the beam and inversely as the metacentric height, so that the broader the ship and the smaller the metacentric height the longer will be the period of roll of the ship and the less will the waves tend to synchronize with and therefore increase the rolling of the ship. Hence, small metacentric height is conducive to small rolling and, so far as the action of the sea alone is concerned, is conducive to safety.

(b) The action of the wind.—The wind produces the greatest heeling effect when blowing broadside on, and if it has continued for long in that direction will have raised a corresponding sea which will tend to roll the vessel. The wind tends to produce a mean inclination of the ship, and she will tend to oscillate about this mean inclined position. Suppose, for instance, the ship has a mean steady list of 10 degrees due to the wind, and that the action of the sea alone would cause her to roll 10 degrees on each side of a vertical line, she will roll when under the action of the wind to approximately 20 degrees to leeward of her own upright position. As only large waves can make a large ship with a small G. M. roll to large angles by synchronization, it is evident that generally it is better to have a ship with a small metacentric height which will therefore roll little, though that little may be about an inclined axis, than one with a large metacentric height which will roll to great angles about a less inclined axis.

### How Much Metacentric Height?

The real question is what smallness of metacentric height is permissible; in other words, to what angle a ship may be allowed to heel under a steady wind pressure in order that her rolling may be reduced, so that the maximum angle to which the ship inclines shall be the least. Take an example of a ship with, say, 2½ feet of metacentric height which under a wind pressure of, say, 8 pounds per square foot in a heavy gale, force 9 to 10, would incline to a steady angle of 5½ degrees. Such a ship would have a period of oscillation of, say, 20 seconds. If this ship's metacentric height be decreased to 1¼ feet she would have a steady heel about 11 degrees and her period would be increased to 28 seconds.

If the 20-second period would cause her to roll at least 5½ degrees (the difference between 5½ degrees and 11 degrees) more than the 28-second period ship, her maximum angle of roll to leeward would be more than that of the less stable ship. The motion of the 28-second period ship would be much slower than that of the 20-second period ship. The disadvantage of a greater mean inclination would exist in the less stable ship. Generally, there would be less liability to rolling in the more tender ship, so that the disadvantage of the greater mean inclination might be more than balanced by the advantage of the reduced frequency of rolling and the reduced maximum angle of rolling. It is, therefore, evident that for a steady wind the reduced stability may, on the whole, in this case, be an advantage. When we consider winds of exceptional force, such as forces of 11 and 12, the mean angle of inclination may be undesirable, and it may be desirable to alter course sufficiently to reduce the heeling effect of the wind in the tenderer ship, but this is a very exceptional condition which can be met with safety.

The effects of gusts of wind of great force acting upon a ship when rolling have received some consideration. It has been assumed that it is possible, under very exceptional circumstances, for a ship to roll through 20 degrees on each side of the upright, and that when rolling to windward through 20 degrees she may at the end of a windward roll be struck by a squall of extreme violence which would, by its continued force and by the action of the roll from windward, cause her to roll to a much larger angle to leeward. To estimate the effect of such a combination of circumstances is not easy. The effect of resistance to rolling through large angles is not easy to estimate, but it is known to be very considerable, and if the roll to leeward due to the squall should be 30 to 40 degrees, the total roll would be 50 to 60 degrees, including the 20 degrees from windward. This roll would take place in less than 10 seconds and the velocity of oscillation would be very high. The effect of the wind pressure acting on the surface of a ship is not easy to determine. It can be calculated on an assumption as to the wind pressure on the surface in terms of its area and angle of inclination, but these assumptions may not be accurate. The only thing that seems to be possible is to compare the rolling of ships under such assumed circumstances, and to compare ships, on such assumptions, which have for years successfully withstood the storms of the ocean with any untried ship whose safety it is desirable to estimate.

This has been done in the case of four ships, of which A, B and C have been on service, and D, which is untried. Taking them all in the same conditions as to lading, with a light cargo and in a spent and ballasted condition at the end of a voyage, it is possible to make a comparative estimate disregarding resistance to rolling, which is very large, but proportionately the same in all the vessels and assuming the wind pressure to be proportional to the area exposed to the wind (force 10), the results are as follows:

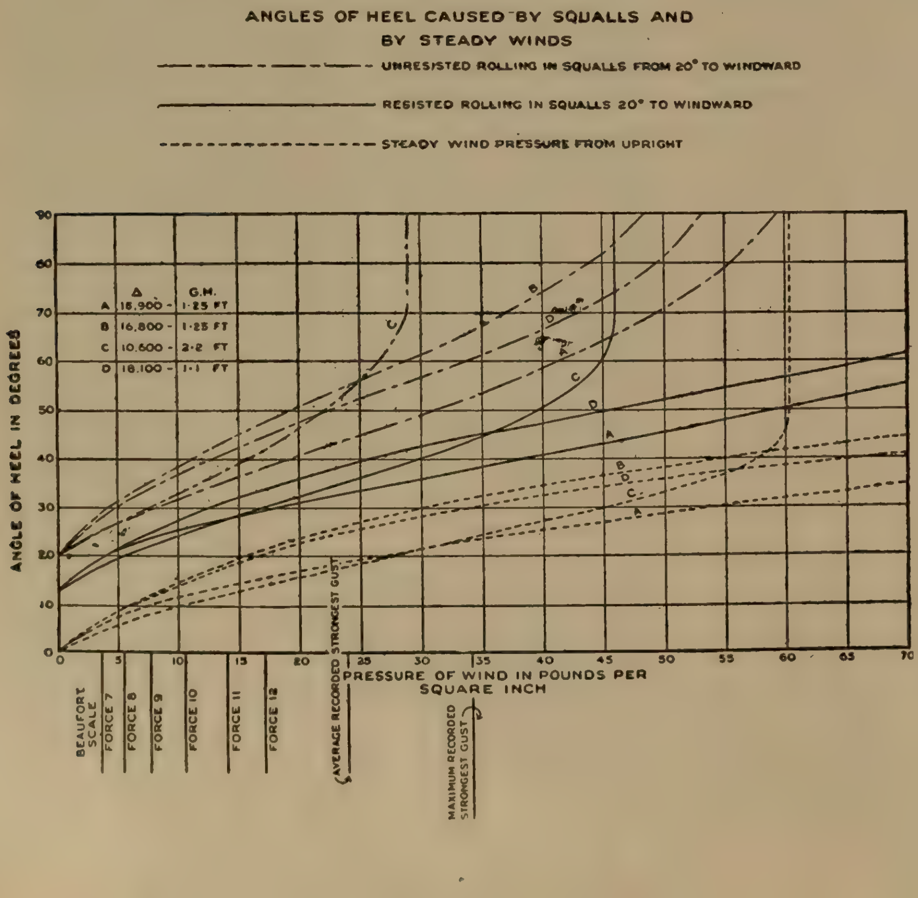
| | |
|---|---|
| A | 32.5 degrees |
| B | 39.5 degrees |
| C | 33.5 degrees |
| D | 37.5 degrees |

This result is reached by equating the area of the wind moment curves from 20 degrees to windward to the angle on the curve of stability which includes the same area.

### Resistance to Rolling

To take account of the resistance to rolling in such ships as these is not very easy. The method of doing so is to assume coefficients of resistance which are based upon experiments made upon ships which have been rolled in smooth water by moving weights across the ship in time with the rolling so as to gradually increase the extreme angle reached. Very few ships have been rolled: and these are nearly all warships. The angle reached has not been very great, nothing like the angles reached at sea when rolling under the action of waves. The laws governing the action of bilge keels in rolling are not fully known on account of the difficulty of carrying out systematic experiments on a large scale to verify any hypotheses. The best that can be done at present is to choose coefficients of resistance from the nearest suitable ship upon which experiments have been made.

H. M. S. Revenge was rolled in smooth water by swinging her turrets and running 300 to 400 men across the ship synchronously with the ship. She was rolled without headway and also at speeds of 10 and 12 knots. The bilge keels were 200 feet long and 3 feet deep, tapering at the ends, the actual area for both bilge keels being 1170 square feet. The center of the keels was 41 feet from the center of gravity of the ship. The dimensions of the ship were: length 380, breadth 75, draught 27 feet 6 inches; displace-



Curves used by Sir John H. Biles to show progressive angles of heel for several typical large ships under various pressures of steady winds and of squalls.

ment 14,300 tons. The period of a single swing was about 8 seconds, that is, 16 seconds for a double swing. The metacentric height was about 3¾ feet.

The results of the experiments on the Revenge may be used for approximating to the resistance to rolling of ships like A, B, C and D, which are ships of about the same order of beam and draught. It will also be possible to compare ships such as these with other vessels of large dimensions which have been running in all kinds of Atlantic weather for many years.

### New Ships and Old

If the resistance to rolling be neglected a comparison between ships having similar elements of resistance such as bilge keels can be made which, while not giving the actual angles to which the ships will roll, will give a means of comparing new ships with those that have successfully withstood the storms of many years. But we may approximate by using the experiments on the Revenge to the effect of resistance and see whether the comparative results are much affected by this resistance. When this is done it must not be assumed that the reduced angles of roll so determined are accurate. They will, as before, only give a comparison of new vessels with old and successfully tried ones. The assumptions which have to be made in order to obtain comparative quantitative results of considerable magnitude (and it is of little use to consider only cases in which the rolling angles are small) must necessarily be only assumptions, and may not represent the actual facts of the case. But they will afford a comparison which for somewhat similar ships ought to enable us to form an opinion on the safety of new ships. On the same assumptions as those already made when resistance to rolling was neglected, viz., being struck by a squall, force 10, when at 20 degrees to windward, the resistance has been approximately calculated with assumed pressures of wind, the angle reached being as follows:

| | |
|---|---|
| A | 25 degrees |
| C | 24½ degrees |
| D | 27½ degrees |

B is so near to D that the results have not been worked out. It seems from these results that there need be no apprehensions of the safety of D.

Another instance has been taken which is of comparative value. The vessels E, F, G and H are vessels which have been successfully crossing the Atlantic for from 20 to 25 years. They are not dissimilar in dimensions, being 63 feet beam and 28 feet draught, but being much older have less lofty deck erections. The determining factors are the exposed area of side and the maximum righting moment of the curve of stability. In these respects these four vessels are very similar to each other. The case of one, E, has been taken. The inclining effect of the wind pressure is about one-half that of D. Neglecting resistance to rolling it is found that a wind pressure of about 32.7 pounds per square foot would bring E to a condition in which she would reach an angle of roll of about 70 degrees under the same assumptions as to weather roll and leave her with practically no margin of stability, so that a little higher wind pressure would completely overset her. In this condition, D would reach 58 degrees and would have a considerable margin of stability so that she could receive a considerable increase of wind pressure without oversetting. It may, therefore, be safely assumed that D is at least as safe as E, which has for over 30 years successfully continued to run. If we take account of resistance to rolling, the comparison is still better for the ships with bilge keels, for the four ships, E, F, G and H, have no bilge keels, and it was demonstrated in the case of the Revenge that the resistance to rolling due to bilge keels is such that at comparatively small angles the angle of roll without bilge keels was about three times what it was with bilge keels. In the case of D, if resistance be taken into account, a 32.7 wind pressure will incline her in a squall to 43½ degrees, while E would probably incline to 60 degrees.

It seems, therefore, that there need be no fear for the safety of D.

### Shifting of Center of Gravity

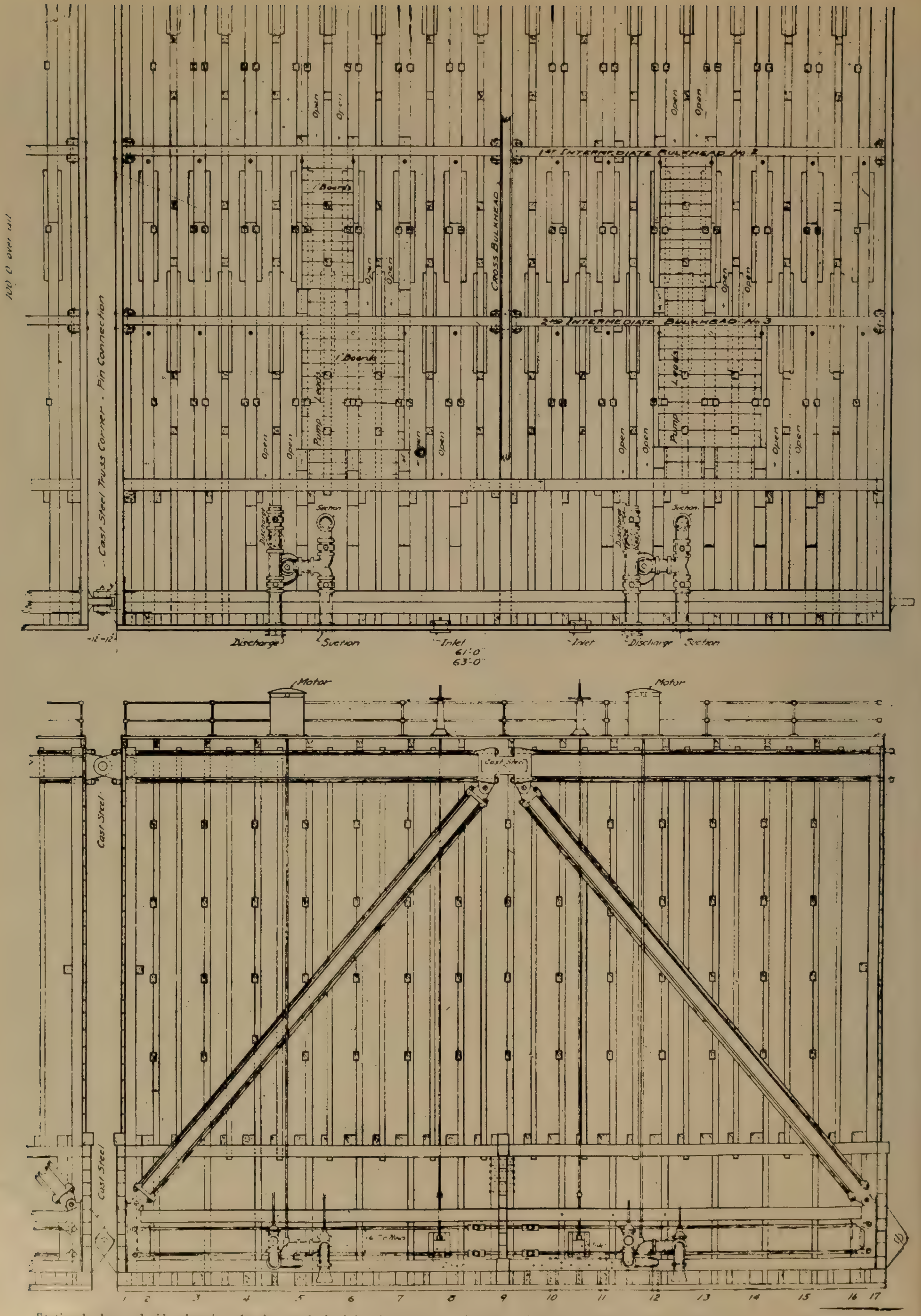
(c) The third cause which has to be considered is that of shifting the center of gravity of the ship by shifting weights inside her. If the vessel rolls to large angles there will be a tendency to shift fuel and cargo. There can be little chance of shifting coal, because in the condition of loading assumed there is but a small quantity of coal left, and this generally will be in the side bunkers which will not permit of much shifting. In other conditions of loading, such as the reserve bunker being partially filled, there is not much chance of coal shifting, as the firemen's passage or some other longitudinal division is in the ship, but the center of gravity of the ship will be lower and the stability greater. Loose water or oil may cause shifting of the center of gravity of the ship, but tanks are usually well divided, and it is usual to empty a tank before beginning to broach another. This should be done as a matter of routine. Where practicable the lee tank should be emptied before the corresponding weather one. The free surface of a tank partially filled tends to set up oscillations which tend to neutralize the effect of inclination. The shifting of cargo is possible, but with ordinary precautions in loading this is not likely to occur. In the case of grain cargoes the trunks leading to the holds will necessarily be well filled to provide feeders for the sinking of the grain. The hatches of the decks below on the trunks should be left off to allow the grain to flow through them as it settles. Special instructions for stowing the grain to avoid the chance of shifting should be systematically given effect to. With these precautions there should be no chance of any appreciable shift of coal or cargo in these vessels.

In the case of heavy rolling due to unusually great wind pressures, it will naturally suggest itself to the master of the vessel to alter course so as to avoid the effects of the abnormal wind pressures. These cases will occur too seldom to appreciably interfere with the successful running of the ship.

### Comfort of Passengers

The comfort of passengers in rolling is dependent largely on the maximum angle of roll and the period in which this angle is rolled. Those who have been to sea in quick rolling ships, especially if the ships are rolling through large angles, are familiar with the great decks far distant from the center of motion. In clear transverse spaces in broad ships the effect of this acceleration is to cause them to find difficulty in holding on to some fixed part of the ship, and if they do not happen to have something to hold on to they will find the operation of being stopped fraught with risk of knocks and possibly bruises. Hence, it is desirable to provide long periods and small angles of roll for the comfort of the passengers.

The question of the relation between the effect of the wind pressure on modern high-sided ships and the metacentric height is one deserving of the most careful consideration. The curves shown on Plate I give the angles of heel of the ships A, B, C, D, under wind pressures acting steadily or in squalls. The angles of heel are given in the cases when resistance is and is not taken into account.



Sectional plan and side elevation showing method of framing, location of pumps, piping, and motors, and the connection arrangement between pontoons of the Crandall floating drydock

# THE CRANDALL DRYDOCK AT CHARLESTON

Desiring to enlarge its activities, Valk & Murdoch Company of Charleston, South Carolina, in 1914 engaged the Crandall Engineering Company, drydock engineer, Boston, to construct one of its standard railway drydocks of 1200 tons' lifting capacity. The dock measured 200 feet over the keel blocks, 55 feet wide and gave 10 feet draft forward and 15 feet aft over the keel blocks. It was constructed entirely of yellow pine with a foundation of yellow pine piles. To protect the cradle from the ravages of marine borers so prevalent in Charleston harbor, the cradle was sheathed to high-water mark with ship's felt and creosoted boards. The cradle is operated by two hauling chains and a powerful steam operated hoist. This railway drydock was completed in 1914 and has been in constant operation since that time.

### The Longitudinally Trussed Dock

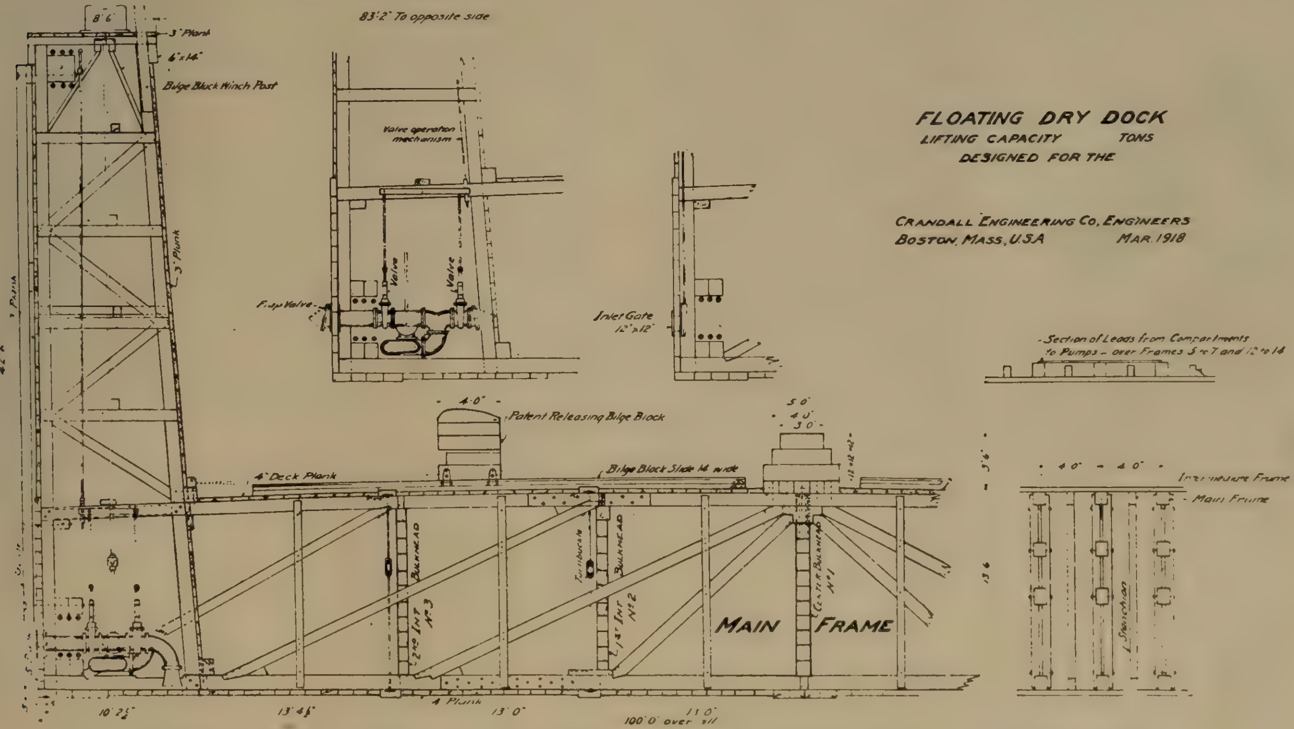
The board of directors of Valk & Murdoch Company, realizing the importance of more drydocking facilities to meet war-time demands, decided to install a floating dock. After careful consideration, the Crandall Engineering Company was again engaged, this time to design a floating dock of 8000 tons' lifting capacity. The designers having just developed the longitudinally trussed sectional dock, it was decided to install that type as being probably the most efficient and least costly. Valk & Murdoch Company began the construction of this dock in their own yard in 1917. After much delay due to commandeering of timber and other commodities by the government, in March, 1919, four sections were ready, so they were joined together and operated until August, 1919, when the other sections were ready and the complete dock was joined together and put in operation.

S. S. Dungannon on the new dock

As probably a unique occurrence, the first drydocking operation was to lift the cradle of the railway drydock, built five years before, for inspection of the underwater portion for damage by worms. This was done by disconnecting the chains from the cradle, floating the cradle by means of scows clamped to the deck and then lifting on the floating dock. Upon inspection the sheathing on the cradle was in perfect condition and the timbers free from worms.

### Rigid Locking of Sections

As a marked departure from the usual method of building drydocks, this floating dock has many unique features. Of course, the first among these and of particular interest is the longitudinal truss system, whereby the sections are rigidly locked together. In the



Half transverse section of pontoon and detail sections showing pump valves, inlet valves and operating mechanism upper and lower corner of each wing there are longitudinal timbers terminating in steel castings. From a steel casting in the middle of the upper longitudinal to the bottom corner castings run diagonal braces to take the stresses in shear. These castings and timbers are securely tied together by steel tie rods and turnbuckles, which take the stress in tension while the timbers take the compressive stress. These form the panel of a Warren truss in the wing wall of each section. The steel corner castings of adjacent sections are made to join together by means of 8-inch steel pins and when so joined together the panels form a continuous Warren truss on each side of the dock and hold the sections rigidly in line. This rigidity is of great importance, because only by such rigidity can a ship be secure against distortion and undue stress due to poor docking and uneven pumping.

Realizing that the transverse trusses in many of the present floating docks are so constructed that it is impossible to make even an approximate analysis of stress in the members, the Crandall Engineering Company's engineers chose a type that is statically determinate, thus enabling the stresses of the members, joints and fastenings to be calculated and the sizes determined to carry these stresses in accordance with good engineering practice and with proper factors of safety. This has resulted in the use of far less timber than in the conventional floating dock and yet the trusses are stiffer and are subject to lower unit stresses under all load conditions. This is substantiated by this floating dock, which after operating three years in almost constant use still retains the camber of its deck, while some of those with the usual type of transverse truss that have been in operation a much shorter time have lost from 4 inches to 8 inches of camber. Departing from the usual side framing with its many dovetail joints, a system satisfactory for scow construction but costly and inefficient in floating dock construction, joints and framing are designed to give greatest strength together with ease of assembly.

### Four Compartments in Each Section

Each section of the dock is divided by transverse and longitudinal bulkheads into four watertight compartments. There are also six intermediate longitudinal stiffening and wash bulkheads. Each compartment of the dock is un-watered by a 10-inch centrifugal pump direct connected to a motor located on the wing. The control of all the pump motors is centralized in the control house at the head of the dock, where one operator may govern the water level in all compartments of the complete dock. To enable all of the lifting capacity to be available for lifting ships it was necessary to eliminate the use of rock ballast, and therefore a simple water ballast system was substituted. Control of all of the valves, except the floodgates, is governed hydraulically at the head of the dock. The bilge blocks are of the patent releasing type. They are moved back and forth by means of endless chains and hand winches on the wing walls. As protection from the teredo and other marine borers the pontoons are protected with two layers of creosoted board over ship's felt.

Another advantage of this type of floating dock is the easy means for self-docking. The various sections are made of such a length that they may be lifted on the other sections and give ample room for work on all sides. To dock an intermediate section it is only necessary to remove the four connecting pins, turn the section 90 degrees and lift on the others. To dock an end section it is only necessary to remove the four pins and lift between the two other sections as illustrated in the diagram.

### Dock Has Six Sections

This floating dock measures 440 feet over the keel blocks, 100 feet wide over the wing walls, 80 feet in the clear, and will give 22 feet of water over the keel blocks. It is made up of six sections, each section 63 feet long between the steel castings. The pumps were furnished by Morris Machine Works, Baldwinsville, New York, and the motors by Wagner Electric Manufacturing Company, St. Louis. Since put in operation this dock has lifted over 150 ships, aggregating over 463,000 gross tons. The method of control has proved most efficient, giving intimate control of the pumping to one operator. The water ballast system works simply and surely. This ease of operation combined with low maintenance cost and low first costs give eminent satisfaction to the owners and reflect careful engineering in the design.

Valk & Murdoch Company has since been reorganized and is now called Charleston Drydock & Machine Company. With ample modern shops and up-to-date equipment the yard is one of the best equipped repair plants in the South and shows the result of a broad vision and careful planning.

## INCREASED PANAMA TRAFFIC IN MAY

A TOTAL of 243 ocean-going commercial vessels transited the Panama Canal during the month of May. The tolls on them amounted to $1,015,057.37, as compared with $953,256.11 tolls for 230 vessels last month, and $835,882.77 for 210 vessels in the month of May last year, says the Panama Canal Record.

The revenue from tolls during May has been exceeded during but three months since the opening of the canal, viz., January, March and October of 1921, when the tolls were, respectively, $1,095,857.46, $1,105,536.55, and $1,047,935.62.

The tons of cargo carried by vessels transiting the canal during May aggregated 1,158,507 tons. With the exception of the cargo in January, 1921 (1,177,053 cargo tons), this is the greatest cargo tonnage through the canal during any month since its opening.

## A CHALLENGE CUP RACE

A TWENTIETH race for the San Francisco challenge cup will be held soon as a result of a challenge by the Corinthian Yacht Club. The yacht Rascal, recently completed at the yard of W. F. Stone & Son for Lester F. Stone, is entered by the Corinthian Club as challenger, and the Francesca, owned by Martin Weil, will defend the cup on behalf of the San Francisco Yacht Club.

The record of the nineteen races held to date is as follows:

| DATE | WINNER | LOSER |
|---|---|---|
| Aug. 31, 1895 | El Sueno, Encinal Y. C. | Queen, S. F. Y. C. |
| Aug. 15, 1896 | Fawn, Encinal Y. C. | Catherine, S. F. Y. C. |
| June 26, 1897 | Aeolus, Corinthian Y. C. | Fawn, Encinal Y. C. |
| Sept. 23, 1899 | Gadder, S. F. Y. C. | Truant, C. Y. C. |
| Aug. 4, 1900 | Aeolus, C. Y. C. | Gadder, S. F. Y. C. |
| Aug. 10, 1901 | Presto, C. Y. C. | Helen, Vallejo Y. C. |
| May 31, 1902 | Challenge, S. F. Y. C. | Harpoon, C. Y. C. |
| July 9, 1904 | Corinthian, C. Y. C. | Challenger, S. F. Y. C. |
| July 17, 1905 | Corinthian, C. Y. C. | Challenger, S. F. Y. C. |
| Aug. 3, 1907 | Discovery, C. Y. C. | Valkyrie, So. Coast Y. C. |
| May 23, 1908 | Discovery, C. Y. C. | Neva, S. F. Y. C. |
| June 19, 1909 | Presto, C. Y. C. | Mah Pe, So. Coast Y. C. |
| May 21, 1910 | Ruby, C. Y. C. | Merry Widow, Aeolian Y.C. |
| Aug. 19, 1911 | Presto, C. Y. C. | Challenger, S. F. Y. C. |
| Sept. 3, 1912 | Fleur de Lys, S. F. Y. C. | Moonlight, C. Y. C. |
| May 25, 1913 | Oreades, Sequoia Y. C. | Challenger, S. F. Y. C. |
| May .., 1914 | Ruby, S. F. Y. C. | Cecelia, Sequoia Y. C. |
| Aug. 11, 1918 | Active, S. F. Y. C. | Moonlight, Aeolian Y. C. |
| July 10, 1921 | Machree, S. F. Y. C. | Bob, C. Y. C. |

# "EX DOCK" IN DELIVERY CONTRACTS

## The Chief of the Division of Commercial Laws of the Bureau of Foreign and Domestic Commerce Explains this Much Used and Often Ambiguous Term

By A. J. WOLFE

THE use of conventional terms in domestic and foreign commerce is very common, well-nigh universal. It is intended to save time and is generally based upon usage. Yet back of the term so used there may lurk a lack of accord between two parties to a contract. A manufacturer may quote f. o. b. New York and his English customer may have a different view of what f. o. b. implies. Both may be right in their own mind, but courts in England and in the United States may have divergent views as to the meaning of the term in a particular contract, or rather as to the various rights and obligations arising from the use of the term in the contract form.

### Standard of Definitions

Under the circumstances it is very unwise to employ even the commonest terms and abbreviations without determining the standard of definitions on which they are based. (At the Congress of the International Chamber of Commerce in London in May, 1920, there developed the greatest differences of opinion as to the meaning of the expression "c. i. f." with regard to the rights and obligations of the buyer and of the seller.) If the expression "c. i. f." is used without such reference, then in the case of litigation the courts of the country where suit is brought will decide in accordance with prevailing judicial rulings. But when an American exporter quotes "c. i. f., in accordance with term definitions adopted by American exporting organizations," then without doubt the acceptance of this quotation will bind the buyer anywhere in the world to these definitions.

A question was recently submitted to the division of commercial laws with regard to the meaning of the quotation "ex dock, Boston," the point being raised whether the buyer or the seller has to bear the wharfage charges. Properly this point might have been specifically dealt with in a separate contract clause; but, lacking this, the division obtained the opinion of a well-informed admiralty law firm, which is given below as of considerable interest.

### Weight of Local Custom

In general, the courts recognize commercial terms of this kind upon the basis of their common acceptation and do not admit parol evidence of usage and the like in support of a different interpretation. In the case of Royal Italian Government v. National Brass & Copper Tube Company (not yet reported) recently decided in the United States District Court, the plaintiff offered evidence of a local usage in support of the contention that delivery of shipments on the dock was sufficient to pass title under a sale "f. a. s. Baltimore." Judge Learned Hand, in giving judgment for the defendant, said:

"I think that this evidence, even if uncontradicted, would not be enough. The consignee would naturally be the one to give the orders for the subsequent movement of the goods because he would know when his ship was ready. That would not involve his acceptance of title from the seller, but would be a nearly inevitable course from general convenience. I think that the proof which in the case of a custom should be clear is not sufficient.

"Moreover, the courts have treated the similar phrases, 'f. o. b.' and 'taken from alongside,' so far as I have found, as not open to interpretation by custom. (Silberman v. Clark, 96 N. Y. 522; Hirsch v. Georgia Iron & Coal Company, 169 Fed. R. 578 (C. C. A. 6th); Turnbull v. Citizens' Bank, 16 Fed. R. 145; Chandler Lumber Company v. Rodks, 136 Wis. 495.) It is, indeed, hard to know in what cases the evidence of custom will be accepted and when it will be rejected. The cases scarcely admit of the easy distinction so often given between what contradicts and what does not contradict the terms of the contract, and I should have been disposed to think that such a phrase might be subject to local custom. Since, however, the cases having decided otherwise, I should not feel free to disregard them."

In the case of Chandler Lumber Company v. Rodks (136 Wis. 495) referred to by Judge Hand, the plaintiff offered evidence to prove a usage under which the purchaser was required to assume payment of freight under a contract calling for delivery "f. o. b. cars Madison, Wis." The court said:

"The expression 'free on board' in a contract like this is not ambiguous, and therefore not open to construction either by proof of custom or otherwise. 'Free on board cars, Madison,' means that the plaintiff, in order to perform its contract, must deliver the lumber on board cars at Madison, Wisconsin, free, to be taken by the purchaser without any obstruction, burden, or impediment."

### Dictionary Definition of Phrases

In view of these decisions, considerable importance attaches to such aid as may be obtained from the dictionaries. In this connection, we note the following definitions in Funk & Wagnalls New Standard Dictionary (1916):

"Ex" (prep.). 3. Commerce. Free out of; not subject to charge until taken out of, as ex elevator, ex ship, ex store, etc. (Vol. I, p. 867.)

"Ex ship" (com.), same as "free overside." (Vol. II, p. 2257.)

"Free overside" (com.), exempt from charges until unloaded from a vessel. (Vol. I, p. 928.)

"Ex store" (U. S.), without free delivery from or after leaving the store. Compare "ex elevator." (Vol. II, p. 2390.)

"Ex elevator" (com.), out of elevator; subject to no dues or charges except such as may arise after leaving the elevator; said of grain so purchased. (Vol. I, p. 804.)

In Words and Phrases, second series, volume 2, page 362, we note the following:

"Ex ship.—The term 'ex ship' as used in a contract for the purchase of a commodity setting the price at so much 'ex ship' does not contemplate a shipment by a particular ship, and simply denotes that the property in the goods shall pass to the buyer upon their leaving the ship's tackle, and that he shall be liable for all subsequent charges of landing them, and does not constitute a condition of the contract but is inserted for the benefit of the seller." Harrison v. Fortlage, 161 U. S. 57.

In the light of these definitions, we think that the words "ex dock" in a contract of sale imply that title to the goods shall pass only upon their removal from the dock by the buyer and that the seller is accordingly liable for the wharfage charges.

The foregoing, of course, might be subject to qualification in a case where the seller places the goods upon the dock at the disposal of the buyer and the buyer declines to take delivery in accordance with the contract stipulation. Where no definite time for delivery is specified by the contract, it would ordinarily be implied that the buyer would take delivery within a reasonable time; and if proper notice to remove the goods were given to the buyer by the seller we think that the seller would be entitled to look to the buyer for subsequent wharfage charges or other expense arising from the buyer's default.

A distinction might also arise in connection with c. i. f. contracts. It has been held in New York, Pennsylvania and some other jurisdictions that under such contracts title passes to the buyer upon transfer of documents, even though it be stated in the contract that delivery is to be made at destination. See Smith Company (Ltd.) v. Moscahlades (193 A. D. 126) and cases collected at pages 129 and 130.

We have been unable to find any local law or usage in Massachusetts which would indicate that the phrase "ex dock" is used in any special or peculiar sense at the port of Boston.

# INTERCOASTAL BUSINESS

## An Analysis of the Tonnage Efficiency of Conference Lines

A STATEMENT showing the number of vessels operated and amount of tonnage carried by each conference steamship line engaged in the United States intercoastal trade for the period January 1, 1921, to June 14, 1922, has been issued by the Pacific Coast headquarters of the Atlantic-Gulf & Pacific. The compilation was designed primarily to show that the newer lines had an excellent position in the rate war because of their ability to fill their vessels to a greater degree than some of the older and larger companies. Aside from that controversial feature, however, the statement is an interesting exhibit of the Atlantic-Gulf & Pacific's own business for the greater part of the time it has engaged in the intercoastal trade, in which it made its appearance in October, 1920.

The data, which, it should be stated, are from the Panama Canal Record, the official publication of the canal, indicate that the Atlantic-Gulf & Pacific has been quite successful in filling its vessels. This is an important element in the success of a company, for it is not so much the aggregate of freight carried that makes for dividends, but the tonnage carried in relation to capacity, or, in other words, the degree to which vessels are loaded, or the reduction of waste space to a minimum.

Measured by tons of cargo carried to the deadweight ton of shipping, the Atlantic-Gulf & Pacific is shown to hold a consistently high place. It has been second or third generally. First comes the Williams Line, which has had a reputation for loading its fleet more heavily than any other line has succeeded in doing. Following Williams for several of the six-month periods in eastbound and westbound business comes the Atlantic-Gulf & Pacific.

### The Eighteen-Month Record

The following tabulations give the A-G-P record in detail:

| Date ............ | Total number of vessels passing canal. | Total tonnage carried ............ | Total D. W. tons of ships ............ | Per cent of D. W. tons operated .... | Average tons cargo a vessel ......... | Per cent of tonnage carried ........ | Tons of cargo to D. W. T. of shipping |
|---|---|---|---|---|---|---|---|
| WESTBOUND | | | | | | | |
| 1/1-6/30/21 | 10 | 48,356 | 81,331 | 12.6 | 4236 | 17.9 | .594 |
| 7/1-12/31/21 | 11 | 50,427 | 88,821 | 10.5 | 4584 | 17.9 | .567 |
| 1/1-6/14/22 | 10 | 48,369 | 91,915 | 10.3 | 4837 | 12.1 | .526 |
| EASTBOUND | | | | | | | |
| 1/1-6/30/21 | 9 | 41,658 | 73,207 | 16.9 | 4628 | 17.1 | .569 |
| 7/1-12/31/21 | 11 | 62,725 | 99,045 | 14.4 | 5702 | 15.4 | .633 |
| 1/1-6/14/22 | 11 | 54,241 | 99,934 | 12.9 | 4931 | 13.6 | .542 |

It is noteworthy that for each six-month period, without exception, the A-G-P has carried more than its proportionate share of the cargo. The best showing was made in the westbound trade for the period January 1 to June 30, 1921, when the line handled 17.9 per cent of all cargo, although it had only 12.9 per cent of the tonnage passing through the canal in the same time.

### Three More Steamers Bought

Announcement has been made that the Atlantic-Gulf & Pacific has purchased of the Shipping Board the 11,500-ton freighters West Chopaka, West Faralon and West Prospect. These vessels with their sister, the West Lewark, all constructed by the Los Angeles Shipbuilding & Drydock Corporation, were the only steamers of their class built for the United States Shipping Board and among the late deliveries shared with the four 10,000-tonners built by the Kiangnan yard, Shanghai, the attention of operators. The West Lewark class vessels have an overall length of 455 feet 9 inches, between perpendiculars of 430 feet 4½ inches; depth molded to second deck of 29 feet 9 inches, to upper deck of 38 feet 3 inches; a designed loaded draft of 28 feet 11¼ inches; a deadweight of about 11,500 tons; a cubic capacity for grain of 578,874 cubic feet; a fuel oil capacity of 1650 tons; coal capacity, permanent and reserve, of 1371 tons; feed water capacity of 250 tons and fresh water 8000 gallons. The cargo-handling equipment consists of fourteen derrick posts fitted with 5-ton booms.

When the A-G-P receives the three new vessels from the Shipping Board it will have a total of 9 vessels of 88,182 deadweight tons. The other vessels now in service are: Liberator, Chas. H. Cramp, West Haven, Cape Romain, Henry S. Grove, Cape Henry. With the nine vessels in operation ten-day sailings will be maintained between New York, Philadelphia, Norfolk, Baltimore, Savannah and Los Angeles, San Francisco, Oakland, Portland, Seattle and Tacoma.

# A PRACTICAL NAUTICAL ARTICLE

By "LITTLE WILLIE"

**"Full many a gem of brightest ray serene is worn by some proud dame of little soul,**
**While some great intellects are born to blush unseen and search for halos in a liner's glory hole."**

WELL, in the long ten days that I have spent following life on the sea, I have amassed a world of information that is unappreciated by mere smatterers, unpossessed by men of lesser experience, unassimilated by those of smaller capacity, and undiscovered by less acute observers. If you could only hear me talk about the "lab board" and the "stab board" side of the ship and "horser" lines and "ten days out of Hong Chong" and "caught in a southeasterly"; and "Davids" and "slings" and "Pilates" whose names do not decorate the pages of history ("Davids" are bent lamp posts that support the life boats and "slings" are for hoisting freight from the ships' "holes"). Port holes that have no mean appreciation for Scotch whisky as well as vast rows of state rooms that the state never possessed or even heard of. Dark stairways that lead ever downward into the very bowels of the ship and "St. Jacobs" ladders made of ropes that tower heavenward until they are lost in the clouds. Countless "Michael Angelos", suspended like spiders, overhang the sides of the ship in their efforts to stay the destructive hand of a relentless sea.

There are spools unencumbered with thread, logs that never were rolled, and drums that beat no rhythm. There are bunkers that do not slip you the bunk, hatches that produce no chicks, and bridges that cross even the mighty deep. Booms unattended by the pestering real estate man and mates complete in a single unit. Sea gulls that are both boys and gulls and no age limit, old sea dogs that look for all the world like human beings, and sea urchins that don't. Then I could talk to you about quartered Chinese and nigger heads without bodies that would fairly make your blood curdle and great mammonth funnels that the untrained eye would take for smokestacks. Cabins that resemble palaces and boat swains that remain swains at the tender age of sixty. Then I might mention the purser, presumably the man who relieves you of your purse, but I'll see that he doesn't get mine.

Some good steamships are clever;
They are Union all over;
U. S. emblem emblazoned on stack;
And for coin—well I guess
They will stand by U. S.!
Every dollar must be Union jack!

Wonders will never cease. There is the fiddley, noted for its conspicuous absence of fiddles, and the wireless receiver, composed of wires mostly. There is the mess room, not for nourishing infants, but for grownups, and alleys unstrewn with tin cans and dead cats. ˛ Squalls without infant mouths to emit them and "gun wails" evolved without guns. "Steve doors" that take tangible forms of mortals and are as plainly visible as those brought out in dark seances and that stalk abroad aboard the ship in broad daylight. And tall, uncanny-looking ventilators that seem like death-plotting periscopes and give one the cold shivers. It is no uncommon sight to see a cargo that does not go, ergo it stands perfectly still. There are great beams that span the entire width of the ship that have no more substance than moonbeams and sea boards that reach from here to the equator. And black winches that work day and night and never tire, ex- or perspire. Halls that draw fathoms of water (which is all the bunk) and cranes that will outpull a span of horses.

Viewed from every possible angle, life before and after the mast is an endless paradox. There are galleys that hold no terrors for criminals and cradles that harbor no babes. Sea paths, like stock, formed of water, and wakes without any dead. And swells, and high seas, and pitches that stir to innermost depths but not of musical genius. Saloons that you enter without knocking and depart from as feelings shall dictate. Spankers that frighten no children, and havens this side of the grave. Sea lions and sea gulls that never affiliate but maintain their species despite rigid codes to the contrary. Knots that never were tied and tide independent of knots. Ships that turn turtle without the spell of the wicked enchanter; and tramps that never walked a single mile. Ropes that become foul before one's very eyes, and under sea cables that bring news over seas. There are sea breezes like zephyrs of summer: summer, golden with promise: summer, laden with joy. Some'r not!

There are storms that surely are rippers,
O'ertake liners with nothing to rip:
And slips are evolved without slippers,
While some skippers never do skip.

And good ships that outweather gales,
Weigh anchor without any scales,
Smuggle opium and all contraband,
And then come in safely to land.

There are swinging yards like the gardens of Babylon and berths unattended by storks. Life preservers that a goat could not subsist on, and charts not for imparting information to babes but bristling with nautical lore. Perched far aloft is the crow's nest where the small boy would climb to find the brood and return with untarnished conscience. Then there are watches that operate the ship. They look just like common people but they strut about the decks and over the gangplanks as though they felt mighty uncommon. I must not omit boards of underwriters though what they write under I have yet to learn, but suppose their pens. I almost forgot to mention the slop chest, no less significant than aromatic for around it cluster all grades of the human species attracted not merely by the swinish element therein.

Time fails me for details on numerous chronological terms, their selection being determined by physical location rather than calendar or dial. 'Round the hatchways the ear records tonnage; in official rooms, message and mileage; in smoking rooms and nurseries, cribbage; on the gangplank, package and luggage; while back by the steerage, it's storage and baggage, and sausage, and cabbage, and garbage.

# THE CLOVERLEAF PROPELLER

By RENWICK Z. DICKIE

THE success of the Cloverleaf propeller, which has been installed on many motorboats about San Francisco Bay, is being won by the intrinsic merit of this wheel, as shown by comparative tests. Its distributors make the unique guarantee that, pitch and diameter being equal, this screw will give better results than will any of the orthodox types.

These distributors, the G. W. Morrow Company, stand by each customer for several days during service trials, and no sale is considered closed until the customer has registered complete satisfaction. By following this course consistently they are now in a position truthfully to make the statement that "in over 100 installations there has been shown in every case a sufficient increase in speed and a sufficient reduction in fuel consumption to amply justify the adoption of the Cloverleaf propeller."

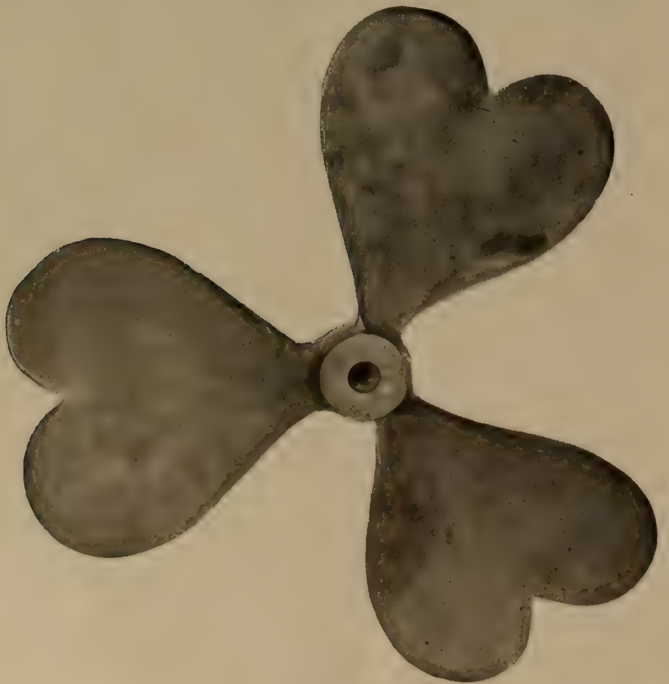
As a definite illustration of the possible savings, we may take the following test: A boat having an elliptical propeller was timed over her run and accurate check kept on her fuel consumption. A Cloverleaf propeller was then installed and the run made under otherwise practically identical conditions. The watches showed time with the elliptical screw 23 minutes, time with Cloverleaf 20 minutes, or an increase in speed of over 13 per cent. Simultaneously the test indicated a decrease in fuel consumption of 10 per cent. One can readily see that a gain of these proportions when applied to larger vessels and heavier powers will rapidly mount into very large savings.

Other very decided advantages of the Cloverleaf design are the marked improvement in power, in speed and in maneuvering ability when going astern, and the marked reduction in vibration at full speed and when reversing.

The Morrow Company are now developing designs suitable for large powers and preparing to enter the ocean-going steamer and motorship fields. If the same proportionate increase in efficiency can be maintained throughout the range of larger screws, it is a reasonable prediction that the art of screw propulsion is entering upon a great movement in advance. We use the word "art" here advisedly because as yet the theory of the Cloverleaf design and the reasons for its success have not advanced to the stage of scientific terminology or mathematical equation.

Just as in naval architecture, the best and most successful hull design has come from experimental tank trials with small models and the close study by experts of the characteristics of the models showing the best tank results, so it is hoped that the success demonstrated by the Cloverleaf propeller in the smaller sizes under actual service conditions will be reproduced in large wheels for the great vessels of commerce.

The final design of each Cloverleaf installation will be worked out to suit individual service needs and will be backed up by the guarantee of satisfaction. The object of the company is to produce practically designed, efficient propellers for satisfied owners.



Cloverleaf propeller

## TONNAGE EXCEEDS RECORDS

DURING May, all previous monthly records of American tonnage through the Panama Canal were exceeded. The vessels of United States registry which transited the canal, numbering 108, out of the total of 243, had an aggregate net tonnage of 511,621, Panama Canal measurement, and carried 608,539 tons of cargo. Tolls paid by these vessels totaled $506,148.97. Vessels of American registry furnished practically half of the tonnage through the canal, paid approximately half of the tolls, and carried slightly more than half of the total cargo passing through the canal. The number of American vessels, 108, was exceeded in five previous months; the record is 121, in August, 1920.

The three principal trade areas covered by American vessels during the month were: (a) Between United States coastwise ports, a total of 55 vessels, aggregating 260,946 net tons, Panama Canal measurement, and carrying 281,447 tons of cargo. (b) Between the East Coast of the United States and the Orient, a total of 16 vessels, aggregating 86,573 net tons, Panama Canal measurement, and carrying 141,285 tons of cargo; and (c) Between the East Coast of the United States and the West Coast of South America, a total of 16 vessels, aggregating 75,932 net tons, Panama Canal measurement, and carrying 76,360 tons of cargo.

## HONORS FOR A SEA COOK

LOUIS D. COUDERE, head baker on the Red Star liner Finland, has recently been decorated by the Belgian government for baking good bread over a long period of years.

Coudere has been in the service of the Red Star Line continuously for thirty-four years. His recognition by the Belgian government is for twenty-five years' continuous service. It is known as "the industrial decoration of the second class, for industry and morality." But for the war it would have been bestowed earlier. Next year Coudere will be in line for the decoration of the first class, of the same order, for thirty-five years' service.

In his thirty-four years with the Red Star Line Coudere has baked an average of 2000 rolls or loaves a day for 350 days in each year, or a total of about 24,000,000. He learned his trade as a baker in Antwerp from his father.

# MARINE INSURANCE

CHARLES F. HOWELL, Eastern Contributing Editor

## Vegetable Oils

With recent years it has become quite general to insure vegetable oils, when shipped in vessels' tanks, against damage from contamination. For example, cocoanut oil from the Far East is frequently carried in the deep tanks of vessels and is insured both on the West Coast and in the New York market against the results of contact with fuel oil and other substances. The contamination hazard is a serious one, and a great deal depends upon the tanks being absolutely clean at the time the oil is pumped in. It is also of the first importance that the tanks be proof against the possibility of coal dust or other foreign substances shifting into them. The necessity for care in the handling of these bulk cargoes is emphasized in a letter recently received by several New York underwriters from their correspondent in the Far East, a man who has had more than the average experience in supervising the loading of oil into vessels' tanks. In his judgment double-bottom tanks should never be used for the carriage of vegetable oils because of the difficulty in thoroughly cleaning the tanks of the residuum of fuel oil, and also because it is practically impossible to pump the tanks dry, thus entailing a loss to the underwriter through leakage. A case is cited by this surveyor of a vessel which made two voyages from Darien to Hamburg with bean oil and then loaded a cargo of nut oil for the United States; despite the fact that every precaution was taken to clean the tanks thoroughly before loading the nut oil, yet the surveyor believes that contamination will result from the residue of bean oil in the tanks. Underwriters, in covering vegetable oil in bulk, are at great pains to supervise the taking of weights and temperatures of the oil at the times of loading and discharging; this is because the loss by leakage is ascertained by comparing loaded and discharged weights, and the temperature at times of loading and discharging affects the outturn weights. Underwriters usually insist upon the tanks being filled as nearly to capacity as possible to prevent leakage from the sloshing around of the oil, but, of course, due allowance is made in loading for the expansion of the oil. Likewise, all tank pipes and pumping apparatus must be tested and approved before the oil is loaded.

## Suez and American Classification

A regrettable slip by the officials of the Suez Canal Company a few weeks ago aroused executives of the American Bureau of Shipping to prompt action, and through their representation it was happily corrected before serious embarrassment was occasioned to large business interests of this country. What has since been apologetically described as an "oversight" appeared in an order of the canal company designating classifications under which tank steamers carrying bulk oil and gasoline would be permitted to make use of that waterway, and while Lloyd's, Bureau Veritas, German Lloyd's, and the British Corporation of Glasgow were all recognized as acceptable classification societies, the American Marine Bureau of Shipping was not mentioned. Now this latter society, by the Merchant Marine Act of 1920, was made the official classification society of the United States, and the exclusion of vessels classed by it would have denied the use of the canal to more than 900,000 tons of American shipping, inclusive of the ships of the United States Navy. As good luck would have it, President Stevenson Taylor of the Bureau was at the time in Europe on business of his society, and his attention was immediately brought to the matter by cable. He at once got in touch with the Suez authorities and the oversight was promised to be corrected immediately by an amended order.

## New Cargo Clause Changed

With the approval of underwriters, Clause 9 of the new American Institute Cargo Form 1922 has been amended to read as follows: "Warranted that this insurance shall not inure, directly or indirectly, to the benefit of any carrier or bailee; and warranted also that the assured has not made and will not make any waiver or special agreement with any carrier or bailee who shall have the custody of any goods hereby insured, releasing such carrier or bailee from its or his common law or statutory liability."

## Cotton to the Fore

On September 1 the new cotton season commenced, and underwriting offices that specialize to any great extent in the coverage of this commodity betrayed evidences of mild excitement. It is doubtful whether there will be any material changes in the premium rates as, while the past season has shown a fair profit as regards straight marine risks, serious losses developed in the coverage of the shore hazard and country damage. Underwriting cotton is one of the most complicated forms of marine indemnity. It necessitates the coverage of the staple from the time it is ginned in the United States until it arrives at the mills in foreign countries for manufacture. The underwriters have not only to survey and classify the various warehouses and sheds in which cotton is held while awaiting sale and shipment, but they must also assume the burden of damage arising through poor packing and improper handling in transit, resulting in what is known in the trade as "country damage."

One of the peculiarities of cotton insurance is that it is practically the only commodity that underwriters universally cover while in storage awaiting sale. It is the practice of

FIREMAN'S FUND
Insures Hulls, Cargoes,
HEAD OFFICE: CALIFORNIA AND SANSOME
JOSEPH HADLEY, European Agent
3 LOTHBURY, E. C.
LONDON
E. A. VALENTINE, Resident Agent for Oregon
714-715 BOARD OF TRADE BUILDING
PORTLAND, ORE.
FRANK G. TAYLOR, MANAGER, PACIFIC NORTHWEST BRANCH

marine insurers to decline storage risks on the ground that a marine policy is intended to cover goods only while in transit, and that storage risks properly come within the province of the fire underwriter as he has the machinery for caring for such insurance. The large values represented in the movement of the cotton crop and the very broad coverage granted, involving, as it does, the conditions surrounding the transportation of this commodity in all the principal countries of Europe, has had the result of attracting certain underwriters into specializing in this branch of the business and giving practically all of their time to it. For years before the war a large part of the crop moved in the first two or three months of the season, which entailed a heavy burden on the offices that wrote any large amount of the commodity; but since the war the movement has been spread out so that the detail of handling the business is much more evenly distributed through the year. Two distinct "pools" divide between them the vast majority of insurance coverages of cotton in this country. A fair margin of profit has so far been experienced by them.

## Cut in Grain Rates

One of the most exciting developments of the midsummer has been the spirited rivalry for grain coverage that broke out towards the close of July and has been progressing merrily ever since. One of the largest companies made a drastic slash in the rates and undertook to raid the accounts of a prominent foreign office. The cut was fifteen per cent below the prevailing rate. The attacked office promptly replied with a fifteen per cent discount to its customers, and a little but strong group was formed among the leading firms of underwriters for the purpose of backing one another up in the fight and adopting concerted action for their mutual protection. It is expected that the same reduction will be made to apply when wheat begins to move, which will be towards the close of the present month. This supplies still another illustration of how desperately driven some of the underwriters are to get their hands on business and to hang on to what they already have.

## Strike Coverage in Demand

One of the immediate effects of the coal and railway strikes was to create a large demand for special coverage against strikes, riots and civil commotions. Nothing could be of more importance to the assured than to make certain that he is fully protected against these serious hazards. The regular marine and transit policies do not carry this hazard. Several of the more enterprising New York offices lost no time in getting this uncovered hazard to the attention of their policyholders, expressing a willingness to endorse their policies to include this coverage upon payment of additional premium to be arranged.

Marine insurance on cargo carries an enhancement of the liability for losses from the unlawful acts of strikers or in consequence of riots and civil commotions, because of the fact that it is usually extended to cover from warehouse to warehouse, or otherwise protects goods on shore prior to shipment and after discharge. The more common cause of such losses is fire, but it is a very diffiicult thing to prove whether the proximate cause of the fire was a natural one or the result of an unlawful act. In the absence of opportunity to study these risks especially, underwriters assume liability for such losses, most cargo policies carrying a clause that reads to the following effect: "Waranted free of loss or damage caused by strikers, locked-out workmen or persons taking part in labor disturbances or riots or civil commotions."

This clause will be waived by the underwriters in consideration of the payment of additional premium. For this purpose the American Institute recommends the following clause: "In consideration of an additional premium of ............ per cent (such premium being subject to revision from day to day) it is agreed that this policy shall also cover destruction of the property insured or damage done to it by strikers, locked-out workmen, or persons taking part in labor disturbances or riots or civil commotions, but warranted free of claim for loss, damage or expense arising from deterioration, loss of market or delay, or from extra handling or storage."

## Optimism in England

The English hull market has been shot to pieces; cargo business there is of the slightest; rates are so low that acceptances mean almost certain loss; and there is a dearth of ready money with which to meet accumulating claims on the business of the last two or three years; and yet the English underwriter is keeping a stiff upper lip and announces that he proposes to sit tight and see it through. Furthermore, he is, to the astonishment of many, exhaling a cool optimism under these daunting circumstances. This he is in a peculiarly fortunate position to do from the fact that he enjoys, more than any of his foreign competitors, a vast world spread of business, so that although he may be receiving losses from one quarter he is making a little money in several others. This is the only substantial foundation for the intricate business of marine insurance, and it has been

INSURANCE COMPANY
Freights and Disbursements
STREETS, SAN FRANCISCO, CALIFORNIA
W. H. WOODRUFF, Manager, Southern California Marine Branch
230 BYRNE BUILDING
LOS ANGELES
CHARLES R. PAGE, Manager
ATLANTIC MARINE DEPARTMENT
72 BEAVER STREET NEW YORK
309 COLMAN BUILDING, SEATTLE, WASHINGTON

with the object of attaining it that the American Foreign Insurance Association was organized two or three years ago and is now establishing agencies in all parts of the world. It is merely an extension of the fundamental underwriting principle of average, so as to make it include world-wide operations over a period of several years.

A prominent New York underwriter who recently returned from a business visit of several weeks among British marine offices declares that the people of England are not so far advanced in the approach to normal as are we. Many British underwriters appear to lack the courage of their convictions, circumstances compelling them to follow courses of which their better judgments cannot approve. They are between the horns of a double dilemma. Their war securities, in which they invested heavily, have declined in value from twenty to forty per cent below the prices at which they were purchased, and to attempt to realize upon them at this time would mean a serious loss. On the other hand, ready money is imperative with which to meet their large overhead and to pay accumulating claims on old business. Many of them are therefore deeming it the wiser course to accept business even at unremunerative rates, because by so doing they can tide themselves over the present stress and escape a greater setback than if they were to throw their depreciated securities on the open market.

Again, there is steadily coming to light over there a large volume of losses that have been concealed, unintentionally, through circumstances growing out of the war; and these delayed disclosures are giving additional anxiety and trouble. Despite these discouraging conditions the British underwriters are displaying their traditional bulldog tenacity and are even cheerful over what the outcome is to be in the long run.

## Geography

It is almost ludicrous to note how rusty even a good marine underwriter sometimes gets on so important a subject as geography, and with what a sense of shock he learns of navigation and transportation possibilities that had quite escaped his memory. Then, too, there are always developments being made in routing; so that it is often borne in upon an insurer that he has to brush up on his geography or miss competitive advantages. By way of example, we would cite some of the sudden surprises brought to the fore in the controversy over the practicability of ocean vessels making use of Great Lake ports. Captain Robert Dollar, grand old man of ocean shipping, contributed his mite by reminding the trade that he is now operating ocean vessels sixteen hundred miles up the Yangtze River in China, and that the Booth Line has a direct service between Great Britian and Iquitos, Peru, which latter port is two thousand miles up the Amazon. It came as a shock to some to learn that the second largest port of Peru is on the Atlantic side of the Andes. It is such information as this that gives point to the need for marine underwriters to keep well up on their familiarity with modern geography and ocean routing.

## The Andree's Sugar Loss

Avoidance of litigation is being sought in the adjustment of the losses occasioned by the collision of the steamers Andree and H. F. Alexander in the Delaware. On account of the prior casuality to the former through fire in her cargo while loading at New York, it has been found difficult to establish the respective liability of underwriters covering the cargo and that of those insuring the Alexander. Could the exact amount of damage to the sugar before the Andree left New York be ascertained, it would be easy to calculate the net loss directly attributable to the collision, but if, on the other hand, the Andree sailed with the intention of surveying the damaged cargo at destination, the problem of correct distribution becomes complicated. The cargo insurance was placed in the New York market, but much of the coverage on the hull of the Alexander was written abroad. A few Americans find themselves on both risks, so they are in for it no matter what the final settlement agreements may be.

## Eastern Office Notes

William Murray, a marine underwriter of the Automobile of Hartford, has resigned.

The Osborns, recently merged with the new firm of Osborn, Slosson & Smyth, have given up their offices at 45 Wall street and share the common headquarters of the combination at 80 Maiden Lane.

Samuel Bird, president of Talbot, Bird & Co., who recently returned from a visit in England and Scotland, declares that British marine rates are stiffening. He says the brokers over there have been discovered by the underwriters to have been putting something across for sometime past in the shape of demanding lower quotations than conditions warranted. The underwriters have at last waked up to the situation and are requiring better rates.

Douglas F. Cox has been elected president of the United States Lloyd's vice Herbert Appleton resigned. Mr. Appleton continues as a director.

Frank H. Appleton, a former vice-president of Appleton & Cox and the son of the senior member of the firm, has organized a new general brokerage office under the firm name of Appleton & Eldredge, Inc., with offices at 67 Wall street. Frank H. Appleton is its president, Herbert Appleton its vice-president in an advisory capacity, Gregory H. Illanes a vice-president, and O. Stanley Eldredge secretary and treasurer. These four officers, together with William McCarroll, a former public service commissioner, will be the directors.

It is rumored that the Washington Marine is to be merged with the United States Lloyd's under the title of the latter. Examiners of the New York insurance department are going over the books of the two companies prior to the amalgamation

Alexander McBride succeeds Commander F. P. Baldwin as exclusive surveyor for the American Bureau of Shipping at Valparaiso, Chile.

James A. McDonald has been appointed non-exclusive surveyor of the American Bureau of Shipping at Alexandria, Egypt.

C. F. H.

## APPRAISAL ENGINEERS

The United States civil service commission announces an open competitive examination for appraisal engineer. Vacancies in the technical staff of the Income Tax Unite of the Bureau of Internal Revenue, Treaury Department, Washington, D. C., at $3000 to $4000 a year, and vacancies in positions requiring similar qualifications, at these or higher or lower salaries, will be filled from this examination, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion. The entrance salary within the range stated will depend upon the qualifications of the appointee as shown in the examination. All citizens of the United States who meet the requirements, both men and women, may enter this examination; appointing officers, however, have the legal right to specify the sex desired in requesting certification of eligibles. The duties of these positions will involve the appraisal of building and other structures, machinery and equipment, dry docks, shipyards and vessels. The performance of the duties will require office work in Washington, D. C., or elsewhere, and field work. Applicants should at once apply for Form 2118, stating the title of the examination desired, to the civil service commission, Washington, D. C.; or to nearest local custom house or first class post office. Application must be in before August 29, 1922.

## 1921 OREGON BUSINESS

| Name of Company | Premiums Received | Losses Incurred | Losses Paid |
|---|---|---|---|
| Aetna Insurance Company | $ 5,560.46 | $ 21.42 | $ 21.42 |
| Agricultural Insurance Company | 588.55 | ............ | ............ |
| Alliance Insurance Company | 6,690.09 | 3,852.45 | 3,852.45 |
| American Alliance Insurance Association | 620.40 | ............ | ............ |
| American Eagle Fire Insurance Company | 67.53 | ............ | ............ |
| American Insurance Company | 42.23 | ............ | ............ |
| Automobile Insurance Company | 11,392.14 | 6,158.19 | 6,148.19 |
| British-America Assurance Company | 333.50 | ............ | ............ |
| British & Foreign Marine Insurance Co. | 42,559.51 | 25,314.95 | 28,498.58 |
| Camden Fire Insurance Association | 257.44 | — 578.61 | 71.39 |
| Columbia Insurance Company | 561.69 | ............ | ............ |
| Commercial Union Assurance Co., Ltd. | 4,577.08 | ............ | ............ |
| Commonwealth Insurance Company | 5.00 | ............ | ............ |
| Concordia Fire Insurance Company | 239.58 | — 493.91 | 10.09 |
| Continental Insurance Company | 404.98 | ............ | ............ |
| Eagle Star & British Dominions Ins. Co. | 770.34 | ............ | ............ |
| Federal Insurance Company | 1,213.40 | ............ | ............ |
| Fidelity-Phenix Fire Insurance Co. | 286.98 | — 300.00 | ............ |
| Fireman's Fund Insurance Company | 94,860.85 | 44,111.09 | 40,659.64 |
| Firemen's Insurance Company | 42.25 | ............ | ............ |
| Franklin Fire Insurance Company | 4,885.40 | ............ | ............ |
| Glens Falls Insurance Company | 204.75 | ............ | ............ |
| Glens Falls Underwriters' Agency | 312.50 | ............ | ............ |
| Globe & Rutgers Fire Insurance Co. | 25,526.18 | 7,008.62 | 6,672.23 |
| Great American Insurance Company | 4,916.37 | 646.73 | 114.79 |
| Hanover Fire Insurance Company | 33.91 | ............ | ............ |
| Hartford Fire Insurance Company | 1,542.67 | 129.51 | 132.93 |
| Home Fire & Marine Insurance Company | 8,523.16 | 978.14 | 978.14 |
| Home Insurance Company | 29,045.95 | 16,444.39 | 4,866.39 |
| Home Underwriters' Agency | 1,045.50 | ............ | ............ |
| Indemnity Mutual Marine Assurance Co. | 4,556.77 | ............ | ............ |
| Insurance Company of North America | 25,799.19 | 28,933.79 | 10,833.79 |
| London Assurance Corporation | 2,724.10 | 1,800.00 | 1,800.00 |
| Marine Insurance Company, Ltd. | 1,188.51 | ............ | ............ |
| Milwaukee Mechanics' Insurance Co. | 4.03 | ............ | ............ |
| National Liberty Insurance Company | 55.00 | 29.53 | 29.53 |
| Washington Underwriters' Dept. | 433.53 | 73.50 | 73.50 |
| National Union Fire Insurance Company | 1,178.82 | ............ | ............ |
| Newark Fire Insurance Company | 55.85 | ............ | ............ |
| New Jersey Fire Insurance Company | 177.02 | 8.00 | ............ |
| Niagara Fire Insurance Company | 4,662.27 | 32.00 | 32.00 |
| North British & Mercantile Ins. Co. | 70.75 | ............ | ............ |
| Norwich Union Fire Insurance Society | 10,776.03 | 206.57 | 206.57 |
| Phoenix Assurance Company, Ltd. | 1,429.41 | 186.12 | 500.12 |
| Phoenix Insurance Company | —2,121.15 | 16,556.42 | 15,178.22 |
| Providence-Washington Insurance Co. | 9,511.86 | 1,853.05 | 1,853.05 |
| Queen Insurance Company of America | 487.22 | ............ | ............ |
| Royal Exchange Assurance | 96.60 | 338.61 | 338.61 |
| Royal Insurance Company, Ltd. | 600.05 | ............ | ............ |
| Scandinavian American As. Corp., Ltd. | 10,273.91 | 1,650.65 | 1,650.65 |
| Scottish Union & National Ins. Co. | 57.50 | ............ | ............ |
| Sea Insurance Company, Ltd. | 254.82 | ............ | ............ |
| Security Insurance Company | 208.34 | —409.35 | 101.65 |
| Springfield Fire & Marine Ins. Co. | 2,009.67 | ............ | ............ |
| St. Paul Fire & Marine Insurance Co. | 2,722.43 | —4,299.89 | 1,852.17 |
| Minnesota Underwriters' Policy | 854.83 | —418.98 | 333.77 |
| Thames & Mersey Marine Ins. Co., Ltd. | 2,659.13 | 1,577.55 | 732.88 |
| Tokio Marine & Fire Ins. Co., Ltd. | 2,356.26 | 100.00 | ............ |
| Union Hispano Americana de Seguros,S.A. | 856.03 | ............ | 1,175.32 |
| Union Marine Insurance Company, Ltd. | 7,441.76 | 124.49 | 124.49 |
| United States Fire Insurance Company | 2,393.56 | ............ | ............ |
| United States Lloyds | 17,501.10 | 2,613.98 | 2,374.39 |
| Vulcan Fire Insurance Company | 3,034.18 | 406.46 | 406.46 |
| Westchester Fire Insurance Company | 264.69 | 226.54 | 795.54 |
| Western Assurance Company | 895.26 | ............ | ............ |
| Totals | $364,700.87 | $161,382.75 | $132,418.95 |

# AMERICAN SHIPBUILDING

## Work in Prospect

The Skagit River Transportation Company of Seattle is planning the construction of a stern-wheel steamboat for the Seattle-Mount Vernon route. She will be 155 feet long, 37 feet beam, 6 feet deep, have a cargo capacity of 600 tons and accommodations for 1000 excursionists, and will be operated in conjunction with the company's stern-wheeler Harvester. The vessel will be built either in Seattle or Mount Vernon, Washington.

A recent report from the East was to the effect that the Newport News Shipbuilding & Drydock Company had been negotiating with parties interested in the building of two passenger liners, the construction of the larger being contingent upon the passage of the ship subsidy bill.

Plans and specifications for the construction of a 100-foot sternwheel towboat are being prepared by the War Department at Washington.

The Clyde Line, Red "D" Line, Old Dominion Line and Catskill Evening Line are all planning to build new ships, and it is expected that bids will soon be asked for, according to a recent issue of the bulletin of the Atlantic Coast Shipbuilders' Association. In addition, several Lake boats and small craft are being considered.

Specifications for a new towboat have been completed by David W. Dickie, naval architect, for the Coos Bay Lumber Company. The tug will be 57 feet long, with a 16-foot beam, and will have a 165-horsepower engine. It is estimated the cost of construction will amount to $30,000. The vessel will be used to tow log rafts from Oakland to Bay Point, California.

## Recent Contracts

**Union Construction Company,** Oakland, California, all-steel oil transportation barge, capacity 4000 barrels, for the Shell Oil Company, estimated cost $175,000.

**Todd Shipyards Corporation,** Brooklyn, New York, three steel single-screw tugboats for the New York Central Railroad, each 108 feet in length over-all, 25-6 beam, 12-9 molded depth, 750 horsepower vertical compound engine, single-end Scotch marine boiler 14-6 x 12, three furnaces, Todd oil-burning equipment; estimated delivery end of January, 1923.

**American Bridge Company,** Pittsburgh, Pennsylvania, 5 sand barges for undisclosed interests, 135 x 27 x 10; estimated launchings October-November, 1922.

**Bethlehem Shipbuilding Corporation, Ltd.,** Harlan Plant, three carfloats Bush Terminal.

## Important Repair Awards

**Todd Dry Docks, Inc.,** Seattle, Washington, conversion of the steamship Dellwood into a cableship for the War Department, $206,426.25.

**Todd Shipyards Corporation,** Brooklyn, conversion of the Southern Pacific Company's liner Comus into an oil-burner and other reconditioning work; also conversion of the Medina of the Mallory Line and the Pawnee of the Clyde Line to oil-burners.

**Crowley Shipyards,** San Francisco, reconditioning of U. S. submarine chaser Smith, $3400.

## Keel-layings

Coastwise passenger and freight steamer Merchants & Miners Transportation Company, Federal Shipbuilding Company, Kearny, New Jersey, July 5.

Double-ended steel ferryboat San Francisco-Oakland Terminal Railways, Los Angeles Shipbuilding & Drydock Corporation, San Pedro, California, June 28.

Carfloat Lehigh Valley Railroad, Bethlehem Shipbuilding Corporation, Ltd., Baltimore Plant, June 3.

## Launchings

Bridge caisson for Camden end of the Delaware River span, New York Shipbuilding Company, July 18.

Foss No. 39, scow Rouse Towing Company, Seattle, Ballard Marine Railway Company, Salmon Bay plant, Washington, July 26.

## Deliveries

S-34, submarine U. S. Navy, Bethlehem Shipbuilding Corporation, Ltd., Union Plant, July 12.

San Mateo, ferryboat James Rolph & Company, Bethlehem Shipbuilding Corporation, Ltd., Union Plant, July 21.

S-25, submarine U. S. Navy, Bethlehem Shipbuilding Corporation, Ltd., Fore River Plant, June 24.

Marore, ore and oil carrier Ore Steamship Company, Bethlehem Shipbuilding Corporation, Ltd., Sparrows Point Plant, June 14.

Missourian, motorship American-Hawaiian Steamship Company, William Cramp Ship & Engine Building Company, Merchant Shipbuilding Corporation, Chester, Pennsylvania, July 10.

Steel derrick lighter Gillespie Contracting Company of New York, DeFoe Boat & Motor Works, Bay City, Michigan, July 5.

## News of the Yards

The conversion of the salvage tug Favorite from coal to oil burning has been completed at Balboa shops, says the Panama Canal Record. The oil tanks built in the ship have a capacity of 2400 barrels, estimated to be sufficient for 24 days' steaming at 10 knots. This estimate is based on previous consumption of 24 tons of coal in 24 hours at 10 knots; on the basis that 2 tons of oil are equivalent to 3 tons of coal, the Favorite would use about 16 tons of oil, or 103 barrels, a ton consisting of 6.43 barrels. The use of oil will enable the Favorite to remain on a job approximately a month without refueling, though this would vary under varying conditions.

In connection with the change of fuel system, the vessel was given a general overhauling, the boilers, fresh water tanks, pumps, etc., being reconditioned, and repairs being made to the main and towing engines. The tailshaft was lined up and the stern bushing was rewooded. In all, the changes and overhauling cost approximately $60,000.

* * *

According to a recent bulletin of the Atlantic Coast Shipbuilders' Association, there has been a slight falling off in the total number of shipyard operatives employed during the second quarter of the year as compared to the first quarter, when for the first time since the signing of the armistice a slight increase in plants along the Atlantic and Gulf Coasts was reported over the preceding quarter. Reports from seventeen companies show a total of 17,884 shipyard workers employed in June as against 18,417 in March. A year ago the combined employes of these same seventeen yards totaled 30,623, and in September, 1919, when shipyard working forces were largest, 82,124. Some of the yards report new contracts recently closed, so that a greater increase is looked for in both the third and last quarters of the year.

* * *

The Standifer Construction Corporation of Seattle has settled its claim, originally in excess of $10,000,000, against the Shipping Board Emergency Fleet Corporation for $998,416 plus $500,000 already paid. The claim covered losses caused by the cancellation of five steel ship contracts and by the changing of lump sum contracts to "cost plus" contracts.

After over fifty years in service, the lighthouse tender Mistletoe has been sold at auction. The last but one of the old side-wheel tenders, she is fifty-one years old, having been built in 1871 at Chester, Pennsylvania, for the sum of $45,833. She is of wood and, according to the Lighthouse Service Bulletin, her original dimensions were: length 137 feet; beam 26 feet; draft 7 feet; gross tonnage 332. In 1881 she was lengthened 16 feet. The Mistletoe was built for use in the third lighthouse district, New York and vicinity, where she remained throughout her service. During the Spanish-American War she did patrol duty in the mine fields in lower New York Bay. As the work of the lighthouse service requires larger and stronger vessels, it was felt that the expense of the repair and maintenance of the old Mistletoe was no longer justified.

* * *

The yards and equipment of the Craig Shipbuilding Company at Long Beach have been leased by the Anchor Lumber Company, manufacturers of stucco lath. It is understood that negotiations are under way for the purchase of the shipyard outright or for a long-term lease.

* * *

The Los Angeles Shipbuilding & Dry Dock Corporation, San Pedro, were the lowest bidders on the contract for the scrapping of the Spanish troopship Nero, which has been tied up at the Mare Island Navy Yard for twenty-four years since her capture by Admiral Dewey at the battle of Manila Bay in the Spanish-American War and was recently purchased from the Navy Department by the Humboldt Trading Company of San Francisco. Under the terms of the contract, the ship will be cut into pieces not exceeding 4000 pounds each. This work will be done by oxyacetylene torches, and the gas needed will be supplied by the shipyard's own plant. The scrap iron will be loaded onto barges and towed back to San Francisco, whence it will be transshipped to Shanghai.

* * *

The five-masted schooner Snow and Burgess was burned recently at Port Townsend, Washington, for the purpose of securing the copper used in her construction. She had seen nearly fifty years of service, having been built at Thomaston, Maine, in 1878. She was launched as a three-mast full-rigged ship and sailed the seas as such until about twenty years ago, when her rig was changed to that of a five-masted schooner at the direction of her owner, the late Captain A. P. Lorentzen. About two years ago she returned to the Sound from Manila with a broken back, due to heavy weather, and it was felt that the present value of sailing ship tonnage did not warrant the expense of repairing her.

* * *

The yacht Cynthia, built by the Todd Shipyards Corporation, successfully completed her trial trip recently. She is a twin screw, diesel engined vessel, 129 feet overall length, 26 feet beam, 6 feet 6 inches draft. Her main propelling machinery consists of two diesel type six cylinder four cycle Winton engines, each developing 225 brake horsepower. She has a cruising radius of 4000 miles and is designed for a speed of 12 knots. The Cynthia is owned by Commodore M. B. Mills of Detroit, Michigan.

* * *

The Hooven, Owens, Rentschler Company of Hamilton, Ohio, have sold to the Standard Oil Company of New Jersey two 2500 horsepower steam reciprocating engines. They will replace geared turbines in two of the company's tankers.

* * *

The steamship Creole of the Southern Pacific Steamship Company has just been extensively reconditioned. Among other improvements is the installation by Charles Cory & Son, Inc., of a Foamite Firefoam fire extinguishing system.

* * *

The Todd Shipyards Corporation recently installed new turbines and pumps in the New York City fireboat Thomas Willett. The work was done at the Clinton plant. After the tests Chief J. J. Henry, consulting engineer of the New York fire department, expressed himself as being highly satisfied with the results.

* * *

Sealed proposals for removing the wreck of the steamship Welsh Prince, sunk in the Columbia River near Altoona, Washington, were asked for by the U. S. Engineer Office, Second District, Portland, Oregon. Bids were to be opened August 24.

* * *

At the recent auction sale held by the United States Shipping Board Emergency Fleet Corporation at Tacoma, Washington, practically all of the material was disposed of with the exception of some boilers. The total receipts amounted to $98,637.01.

* * *

Bids have been called for by the Army board of engineers for rivers and harbors for the construction of a seagoing bar dredge for use in Grays Harbor under the management of the Port of Grays Harbor. It will be as large as the Coos Bay dredge Michie, will be equipped with diesel engines of the largest type, and will take about eighteen months to build.

* * *

It is estimated that Japan will require yen 130,000,000 to comply with the provisions of the treaty drawn up at the disarmament conference in Washington. Yen 15,000,000 will be needed to scrap the nine battleships and three battle-cruisers, although this figure will be reduced if it is decided to convert the battleships Asahi and Shikishima into training ships and use the battleship Settsu as a target. Bonuses for the discharged naval officers and men and relief for workmen thrown out of employment will necessitate yen 35,000,000. The reconstruction of the remaining capital ships and the cancelling of contracts placed with various firms will cost yen 50,000,000, while approximately yen 35,000,000 must be paid as indemnity.

* * *

The Nippon Yusen Kaisha's steamship Hakozaki Maru, the last of three passenger liners built by the Mitsubishi Dock Company, Nagasaki, has been placed in the N. Y. K.'s European service. The other two ships, the Hakone Maru and the Haruna Maru, are already on that run. The Hakozaki Maru, a vessel similar to the Haruna Maru, is 515 feet long, 62 feet wide, 37 feet deep, with a gross tonnage of 10,500, a displacement of 18,800 tons, and accommodations for 120 first class, 56 second class and 180 steerage passengers. She is fitted with two sets of double reduction geared turbines, giving a speed of 16 knots an hour.

* * *

For the first six months of its fiscal year the Kawasaki Dockyard Company of Kobe made a net profit of yen 4,616,023. This combined with yen 1,821,652 carried over from the last account gave approximately yen 6,437,675 to be distributed, and at the semi-annual general stockholders' meeting a dividend was declared for the half-year at the rate of 15 per cent a year. Yen 1,822,925 was carried to new account. The company also authorized the flotation of debentures to the amount of yen 35,000,000 or £3,500,000 for the purpose of redeeming its loans, the date and terms of the bonds to be left to the discretion of the directors. According to a statement made by its president, the Kawasaki Company has been hard hit by the naval limitation program, but has received enough orders to maintain the whole plant in full operation until 1924, among them being those for the building of five submarines, one light cruiser and two naval special service boats, and for 112 locomotives, 200 passenger and 252 freight cars.

* * *

The Todd Dry Docks, Inc., Seattle, Washington, were low bidders on the contract for the conversion of the 8800-ton steamship Dellwood into a cableship for the War Department. The following bids were submitted: Todd Dry Docks, Inc., $206,426.25; Willamette Iron & Steel Works, $215,595; Commercial Boiler Works, $246,022; Heffernan Drydock Company, $283,485; Naval Station, Puget Sound, $398,660. The latter was submitted as an estimate. The contract has been awarded to the Todd plant. Under its terms the work must be completed on or before February 28, 1923, which means steady employment for between 250 and 300 men for about eight months. When completed, the Dellwood will take the place of the cableship Burnside in maintaining the Seattle-Alaska cable.

# Construction and Repairs

## Pacific Coast

### BETHLEHEM SHIPBUILDING CORPORATION, LTD. UNION PLANT

#### Potrero Works

Purchasing Agent: O. W. Streett.

Submarines USN: S-34, hull 139; S-35, hull 140; S-36, hull 141; S-37, hull 142; S-38, hull 143; S-39, hull 144; S-40, hull 145; S-41, hull 146. **S-34 delivered July12/22.**

#### Alameda Works

Chilore, hull 5309, combination ore and coal carrier Ore Steamship Co; 571-6 LOA; 550-1 LBP; 72 molded beam; 44 molded depth; 32-4 loaded draft; 11½ loaded speed; 20,000 D WT; Curtis turbines with Falk reduction gears, 5000 SHP; 3 Scotch SE boilers, 17-6x12, each 4287 sq ft; oil burners; keel Apr17/22.

Lebore, hull 5310, combination ore and coal carrier Ore Steamship Co; sister to above.

San Mateo, hull 5314, ferryboat Jas Rolph & Co; 230 LOA; 63-6 beam over guards, 42 molded; 19-6 molded depth; TE eng, 1400 IHP; propeller drive; 3 WT boilers; keel Aug27/21; launch May9/22; **deliver July21/22.**

No name, hull 5315, ferryboat Jas Rolph & Co; sister to above; keel Feb20/22.

No name, hull 5316, ferryboat Jas Rolph & Co; sister to above; keel May12/22.

### CHOLBERG SHIPYARD, VANCOUVER, B. C.

Purchasing Agent: W. Meed.

(These vessels to be completed by Dominion government.)

Sir Henry Drayton, hull 5, 4-masted barkentine Victoria Shipowners, Ltd; 250 LOA; 45-6 beam; 21-10 loaded draft; 2400 DWT; sailing vessel; shaft logs fitted for auxiliary but no machinery installed; keel May 15/20.

No name, hull 6, 4-masted barkentine Victoria Shipowners, Ltd; sister to above; keel June4/20.

No name, hull 7, 4-masted barkentine Victoria Shipowners, Ltd; sister to above.

### HANLON DRYDOCK & SHIPBUILDING COMPANY, OAKLAND, CALIF.

Purchasing Agent: R. Barker.

S. S. CITY *of* HONOLULU (17,500 TONS) *and* S. S. CITY *of* LOS ANGELES (22,500 TONS)

Dan F. Hanlon, hull 89, steam schr. D. J. Hanlon; 2500 DWT; 1400 IHP engines; 2 B&W boilers; work suspended.

### J. C. JOHNSON, PORT BLAKELEY, WN.

Wooden scow, builder's account, 110x36x11; deliver July15/22, est.

### LOS ANGELES SHIPBUILDING & DRYDOCK CORPORATION, SAN PEDRO, CALIF.

Purchasing Agent: L. R. McFie.

No name, hull 37, double-ended steel ferryboat San Francisco-Oakland Terminal Railways; 225 LBP; 42 molded beam, 62-7 over guards; 11-6 loaded draft; 13 loaded speed; turbo-electric eng, 1350 IHP; 2 B& W WT boilers, 5000 sq ft total HS, 225 WP, 65 superheat, natural draft, oil-burning; keel June28/22; launch Sept25/22, est; deliver Nov25/22, est.

No name, hull 38, double-ended steel ferryboat San Francisco-Oakland Terminal Railways, sister to above; keel June28/22; launch Oct 2/22, est; deliver Dec8/22, est.

### NAVY YARD, PUGET SOUND

Medusa, repair ship for government; 460 LBP; 70 beam; about 19 loaded draft; 17-5 loaded speed; turbine eng, 7000 IHP; 2 WT express type boilers; 10,000 tons disp; keel Jan2/20; launch and deliver dates not set.

Holland, submarine tender for government; 460 LBP; 61 beam; about 20 loaded draft; 16 K loaded speed; turbine eng, 7000 IHP; two WT express type boilers; 10,000 tons disp; keel Apr11/21.

### NAVY YARD, MARE ISLAND

Montana, battleship USN; 660 LB P; 105 beam; 33 loaded draft; 23 loaded speed; 42,200 disp; turbo-electric engs, 60,000 SHP; 12 Bu's express boilers, 74,040 sq ft; keel Sept 1/20.

Decatur, destroyer USN; 310 LBP; 30-11½ beam; 9-4 loaded draft; 35 loaded speed; 1215 disp; geared turbine eng, 26,000 SHP; 4 Normand boilers, 27,000 sq ft; keel Sept15/20; launch Oct29/21.

### PRINCE RUPERT DRYDOCK & SHIPYARD, PRINCE RUPERT, B. C.

Manager: J. H. Pillsbury.

Francois Lake Ferry No. 2, steel ferryboat for Provincial Government; 66 LBP; 27 beam, 8 loaded draft; 12 loaded speed; twin gas engs, 50 IHP; keel Feb/22; launch July10/22; deliver July20/22, est.

### W. F. STONE & SON, OAKLAND, CALIF.

Rascal, sloop builder's account; 41 LBP; 8-6 beam; 6 deep; launch May16/22.

Corinthian II, sloop Corinthian Yacht Club; 35 LBP; 8-8 beam; 6 deep.

No name, aux sloop builder's account; 49 LBP; 14 beam; 5-6 deep; gas eng, 15 IHP.

Sparrow, tug Alaska Packers' Association; 65 LBP; 16 beam; 5-6 deep; gas eng, 80 IHP.

No name, trawler Western Fish Company; 65 LBP; 16 deep, 7 loaded draft; Diesel eng, 120 IHP.

No name, trawler Western Fish Company; sister to above.

Pile-driver Naknek Packing Company; 40 LBP; 20 beam; 3 loaded draft.

### TODD DRYDOCK & CONSTRUCTION CORP., TACOMA

Purchasing Agent: C. L. Bankson.

Omaha, hull 100, scout cruiser US N; 555-6 LOA; 550 LBP; extreme beam 55-4; molded beam 54-9; depth molded 26; mean loaded draft 13-6; disp 7100 tons; Westinghouse Parsons turbines and reduction gear, 105,000 IHP; designated speed 34; 12 Yarrows WT boilers; keel Dec6/18; launch Dec14/20.

Milwaukee, hull 106, scout cruiser USN; sister to above; keel Dec13/18; launch Mar24/21.

Cincinnati, hull 107, scout cruiser USN; sister to above; keel May15/20; launch May23/21.

## Atlantic, Lakes, Rivers

### AMERICAN BRIDGE COMPANY, PITTSBURGH, PENN.

Purchasing Agent: W. G. A. Millar.

Fifteen decked barges, 120 LBP; 30 beam; 7 deep; US Engineers, Memphis, Tenn.; 11 launched, 9 delivered.

One dredge hull, H. H. Halliday Sand Co, Cairo, Ill; 110 x 30 x 5-6; launch June6/22; delivered.

Four decked barges, undisclosed interests, 180x36x8; 3 launch June/22; launched July/22; all delivered.

One wharfboat, undisclosed interests, 160x26x5; launch June6/22; delivered.

Two carfloats, Long Island R R Co, 292x42x11-6; under construction at Federal Shipbuilding Co, Kearny, N. J.; launch Sept/22, est.

Five sand barges, undisclosed interests; 135x27x10; launchings Oct-Nov/22, est.

### THE AMERICAN SHIP BUILDING CO., LORAIN, OHIO

Purchasing Agent: W. H. Gerhauser.

No name, hull 781, bulk freighter H. K. Oakes Company; 596 LBP; 64 beam; 21 loaded draft; 12 mi loaded speed; 13,000 DWT; TE engs, 2400 IHP; 3 Scotch boilers, 14x11, 185 WP; keel July/22, est; launch Oct/22, est; deliver Nov/22, est.

No name, hull 782, bulk freighter Pittsburgh Steamship Co; 580 LBP; 60 beam; 21 loaded draft; 12 mi loaded speed; 12,500 DWT; TE engs, 2300 IHP; 3 Scotch boilers, 13-6x11, 185 WP; keel July/22, est; launch Oct/22, est; deliver Nov/22,est.

No name, hull 783, bulk freighter Pittsburgh Steamship Co; sister to above; keel Dec/22, est; launch Mar/23, est; deliver May/23, est.

No name, hull 784, bulk freighter G A Tomlinson Co; sister to above; keel Dec/22, est; launch Mar/23, est; deliver May/23, est.

### BATH IRON WORKS, LTD., BATH, MAINE

Purchasing Agent: John L. P. Burke.

Light vessel 106, hull 87, second-class light vessel US Dept of Commerce, 109-6 LBP, 30 beam, 14-4 loaded draft, 9½ speed; comp eng, 400 IHP; 2 Scotch boilers, 10-6 x 11-4; keel Apr12/22; launch Oct/22, est; deliver Dec/22, est.

Light vessel 107, hull 88, sister to above; keel Apr14/22; launch Nov/22,est; deliver Jan/23, est.

Light vessel 108, hull 89, sister to above; keel May24/22; launch Jan/23, est; deliver Mar/23, est.

Light vessel 109, hull 90; sister to above; keel May31/22; launch Mar/23, est; deliver Apr/23, est.

Light vessel 110, hull 91, sister to above; keel prior to Oct/22, est; launch May/23, est; deliver June/23, est.

### BETHLEHEM SHIPBUILD'G CORPORATION, BALTIMORE DRYDOCK PLANT, BALTIMORE

Fort McHenry, hull 125, tanker builder's account; 340 LBP; 49 beam; 23-6 loaded draft; 10½ loaded speed; 6050 DWT; rec eng, 2000 IHP; 2 Scotch boilers, 15-6; keel Nov24/20; launch Feb1/22.

Hull 129, carfloat Lehigh Valley R. R.; 270 LBP; 38 beam; 10-6 loaded draft; keel Apr26/22.

Hull 130, carfloat Lehigh Valley R. R.; 325 LBP; 38 beam; 10-6 loaded draft; keel Apr26/22.

Hull 131, carfloat Lehigh Valley R. R.; 180 LBP; 36 beam; 9 loaded draft; keel June3/22.

### BETHLEHEM SHIPBUILDING CORP., FORE RIVER PLANT, QUINCY, MASS.

Lexington, hull 1300, battle-cruiser U S N.

Raleigh, hull 1382, scout cruiser U S N.

Detroit, hull 1383, scout cruiser U S N.

Massachusetts, hull 1400, battleship USN.

S-19, hull 1309, submarine U. S. N.

S-21, hull 1312, submarine U. S. N.

S-24, hull 1315, submarine U. S. N.

S-25, hull 1316, submarine U. S. N.; deliver June24/22.

S-26, hull 1317, submarine U. S. N.

S-27, hull 1318, submarine U. S. N.
S-28, hull 1319, submarine U. S. N.
S-29, hull 1320, submarine U. S. N.
S-42, hull 1389, submarine U. S. N.
S-43, hull 1390, submarine U. S. N.
S-44, hull 1391, submarine U. S. N.
S-45, hull 1392, submarine U. S. N.
S-46, hull 1393, submarine U. S. N.
S-47, hull 1394, submarine U. S. N.

### BETHLEHEM SHIPBUILDING CORP., HARLAN PLANT, WILMINGTON, DEL.

Hull 3478, yacht Keith Spalding; 150 LBP; 30 beam; 15-3 deep; 360 DWT; two 6 cyl 180 HP Nelseco diesel engs.
Hull 3479, carfloat Bush Terminal.
Hull 3480, sister to above.
Hull 3481, sister to above.

### BETHLEHEM SHIPBLDG. CORP., SPARROWS POINT PLANT, SPARROWS POINT, MD.

Marore, hull 4212, ore and oil Ore SS Co; 550 LBP; 72 beam; 32-4 loaded draft; 11½ loaded speed; 20,000 DWT; turb eng, 4600 IHP; 3 Scotch boilers, 17-6x12; keel May 2/21; launch Apr1/22; **deliver June 14/22.**

Steelore, hull 4213, ore and oil Ore SS Co; sister to above; keel July 20/21.

### COLLINGWOOD SHIPBUILDING CO., LTD., COLLINGWOOD, ONTARIO

Charles Dick, hull 71, National Sand & Material Company, Ltd., Welland, Ontario; 250 LBP; 43 beam; 16-6 loaded draft; 11 loaded speed; 2800 DWT; TE engs, 1400 IHP; 2 Scotch marine boilers, 14-7x10-8; keel Feb21/22; launch May27/22; deliver July15/22, est.

### CONSOLIDATED SHIPBUILDING CORPORATION, MORRIS HEIGHTS, N. Y.

Purchasing Agent: Bruce Scrimgeour.

Zalophus, steel motor houseboat for John Ringling; 125 LOA; 21 beam; 4 draft; 12 speed; two 6-cyl 180 HP Nelseco diesel engs; keel Mar22/22; launch June24/22; deliver Aug15/22, est.
Steel motor cruiser for Charles Ringling; 120 LOA; 20 beam; 4 draft; 2 Speedway 6-cyl engs, 165 HP each; **keel June30/22;** deliver Oct15/22, est.

### WILLIAM CRAMP & SONS SHIP & ENGINE BUILDING CO., PHILADELPHIA

Purchasing Agent: Ed. C. Geehr.
Richmond, hull 448, scout cruiser U. S. N.; keel Feb16/20; launch Sept 29/21; 90.3 per cent comp July1/22.
Concord, hull 449, scout cruiser USN; keel Mar29/20; launch Dec 15/21; 85.2 per cent comp July1/22.
Trenton, hull 501, scout cruiser USN; keel Aug18/20; 58 per cent comp July1/22.

Marblehead, hull 502, scout cruiser USN; keel Aug4/20; 47.2 per cent comp July1/22.

Memphis, hull 503, scout cruiser USN; keel Oct14/20; 42.4 per cent comp July1/22.

Installing Diesel engines in M.S. Missourian; **deliver July10/22.**

### DEFOE BOAT & MOTOR WORKS, BAY CITY, MICH.

No name, hull 60, yacht G. W. Megeath; 98 LBP; 15 beam; 6 draft; 14 speed; Standard gas eng; keel June 28/22; launch Aug 1/22, est; deliver Nov1/22, est.
No name, hull 61, yacht builder's account; sister to above; keel June 28/22; launch Aug15/22, est; deliver Apr15/23, est.
No name, hull 63, wood yacht K. M. Devos; 65 LBP; 12½ beam; 4 draft; 22 speed; gas eng; keel Mar 10/22; launch July25/22, est; deliver Aug1/22, est.
No name, hull 64, wood yacht J. H. Reid; 42 LBP; 11 beam, 3½ draft; 11 speed; gas eng; keel Mar 30/22; launch July25/22, est; deliver Aug1/22, est.

No name, hull 65, steel derrick lighter, Gillespie Contracting Co of N Y; 82 long; 32 beam; 8 deep; keel June10/22; launch June28/22; **deliver July5/22.**

### FEDERAL SHIPBUILDING CO., KEARNY, N. J.

Purchasing Agent: J. L. Hastings.

Hull 68, freighter undisclosed interests; 425 LBP; 56 beam; 27 loaded draft; 11½ loaded speed; 10,025 DWT; Parsons turbines, 3100 SHP; 3 Scotch boilers, 15-3x11-3¾; keel Mar16/22; launch Aug1/22, est; deliver Sept1/22, est.
Hulls 69-70, steel oil barges, Gulf Refining Company; 158 long; 37 beam; 11-6½ deep.

No name, hull 71, steel drill boat War Department, sub-contract from Dravo Contracting Company; 157 LBP; 52 beam; 12-9 deep.

No name, hull 72, coastwise passgr and frt Merchants & Miners Transportation Co; 350 LBP; 52 beam; 19 loaded draft; 12 loaded speed; TE engs, 2700 IHP; 4 SE Scotch boilers, 14-3x11; **keel July 5/22;** launch Nov15/22, est; deliver Jan15/23, est.

No name, hull 73, coastwise passgr and frt Merchants & Miners Transportation Co; sister to above; keel Aug15/22, est; launch Dec15/22, est; deliver Feb15/23, est.

Hulls 74-75, steel car floats, Long Island Railroad, 292 long; 43-8 beam; 11-6 deep.

### FRASER, BRACE, LIMITED, THREE RIVERS, QUEBEC

N. H. Botsford, Lake freighter George Hall Coal Co. of Canada; 250 LBP; 43 beam; 20-6 deep; 12 loaded speed; TE eng, 19x32x56-36 stroke; 2 Scotch marine boilers, 14-7 x10-8, coal burning.
Frank A. Augsbury, Lake freighter George Hall Coal Co. of Canada; sister to above.
Sister to above.
Sister to above.

### GREAT LAKES ENGINEERING WORKS, RIVER ROUGE, MICHIGAN

Purchasing Agent: H. O. Kretlow.
James MacNaughton, hull 242, bulk frt Wilson Tran Co, Cleveland; 580 LBP; 60 beam; 20 loaded draft; 11½ miles loaded speed; 11,800 gross, TE engs, 1880 IHP; 3 Scotch boilers, 13-6; keel May3/22; launch Sept1/22, est; deliver Oct1/22, est.

### KYLE & PURDY, INC., CITY ISLAND, NEW YORK CITY

Purchasing Agent: T. A. Kyle.
No name, hull 154, steel ferryboat department of plants and structures, City of New York; 90 LBP; 30 beam; 6-8 loaded draft; 10 miles loaded speed; 100 DWT· comb eng, 200 I HP; Roberts tube boilers.

### LAKE TORPEDO BOAT CO., BRIDGEPORT, CONN.

Purchasing Agent: C. D. Maxfield.

S-48, hull 48, submarine U S N; launch Feb26/21.

### MERCHANT SHIPBUILDING CORPORATION, CHESTER, PENN.

Vice-President: J. L. Ackerson.

Missourian, hull 386, freighter American-Hawaiian SS Co; 445 LBP; 59-8 beam; 28-6 loaded draft; 11½ speed; 11,000 DWT; 2 6cyl, 4-cycle Diesel engs, 4500 metric; 1 vertical donkey, 400 sq ft HS; keel Feb10/21; launch Dec14/21; at Cramp yard for installation of diesel engines; **deliver July10/22.**

### NAVY YARD, BOSTON

Whitney, destroyer tender No. 4 USN; 460 LBP; 60-10⅛ molded beam; 21-0½ normal draft; 16 loaded speed; 10,600 normal disp; geared Parsons turbs, 7000 SHP; 2 WT exp boilers; keel Apr 23/21; launching indefinite.

### NAVY YARD, PHILADELPHIA

Dobbin, hull 7, destroyer tender USN; 460 LBP; 60-10 beam; 21 loaded draft; 16 loaded speed; 10,600 tons disp; Parsons geared turb single screw engs, 7000 SHP; 2 WT boilers; keel Dec23/19; launch May 5/21; deliver date not determined.
Constitution, hull 8, battle cruiser USN; 850 LBP; 105-4 beam; 30-11½ loaded draft; 33½ loaded speed; 43,500 disp; electric drive, 180,000SHP; 16 WT boilers; keel Sept25/20.
United States, hull 9, battle cruiser USN; 850 LBP; 105-4 beam; 30-11½ loaded draft; 33½ loaded speed; 43,500 disp; electric drive, 180,000 SHP; 16 WT boilers; keel Sept25/20.

### NEWPORT NEWS SHIPBUILDING & DRYDOCK COMPANY, NEWPORT NEWS

Purchasing Agent: James Plummer, 233 Broadway, New York City.

West Virginia, hull 211, battleship USN; 600 LBP; 97-3½ beam; 30-6 mean draft; 32,600 normal disp; 21 speed; GE turbo-elec drive, 28,900 SHP; 8 B&W WT boilers, oil, 41,768 sq ft plus 4168 superheat; keel Apr 12/20; launch Nov19/21.

Constellation, hull 215, battle-cruiser USN; 850 LBP; 101-8¼ beam; 31 mean draft; 43,500 normal disp; 33¼ speed, est; Westinghouse turbo-elec drive, 180,000 SHP; 16 WT boilers, oil, 198,000 sq ft plus 18,000 superheat; keel Aug18/20.

Ranger, hull 215, battle-cruiser USN; sister to above; keel June23/21.

Iowa, hull 258, battleship USN; 660 LBP; 105 beam; 33 mean draft; 43,200 normal disp; 23 speed; GE turbo-elec drive, 60,000 SHP; 12 White-Forster WT boilers, oil, 82,800 sq ft plus 8940 superheat; keel May17/20.

Ohio, hull 265, diesel yacht Cox & Stevens; 172 LOA; 26 beam; 15-6 deep; keel Aug/22, est; launch Sept/22, est; deliver Nov/22, est.

### NEW YORK SHIPBUILDING CORPORATION, CAMDEN, N. J.

Purchasing Agent: L. G. Buckwalter.

Eurana, hull 264, bulk oil stock; 419-3 LBP; 56-3 beam; 25-9¼ loaded draft; 10¾ loaded speed; 9870 DWT; 3 cyl TE engs, 3000 SHP; 3 SE Scotch boilers, 15-10x11-4; keel Jan17/21; launch July16/21.

No name, hull 265, bulk oil stock; sister to above.

Saratoga, hull 199, battle cruiser USN; 874 LOA; 850 LBP; 105-5¼ extreme beam; 31 mean draft; 43,500 normal disp; 33¼ loaded speed; GE turbo-electric drive; 180,000 SHP; 16 WT boilers, 198,000 sq ft plus 18,000 superheat; keel Sept25/20.

Colorado, hull 200, battleship USN; 624 LOA; 600 LBP; 97-3½ beam waterline; 30-6 mean draft; 32,600 normal disp; 21 loaded speed; Westinghouse turbo-electric drive, 28,900 SHP; 8 B&W WT boilers, 41,678 sq ft plus 4169 superheat; keel Mar29/19; launch Mar22/21.

Washington, hull 201, battleship USN, sister to above; keel June30/19; launch Sept1/21.

Kamoi, hull 267, fuel ship Japanese Navy; 497-8 LOA; 67 beam; 28 designed draft; 15 loaded speed; 13,000 DWT; elec drive, 8000 SHP; 4 WT boilers; keel Sept14/21; launch June8/22.

Hull 269, carfloat Brooklyn Eastern District Terminal; 340 feet long; keel May4/22; launch July15/22, est.

Hull 270, barge Rockland & Rockport Lime Corporation; length 196-10; keel June14/22.

Hull 271, sister to above; keel June19/22.

Hulls 272-274, inc, sisters to above; keels not laid.

### PORT ARTHUR SHIPBUILDING CO., PORT ARTHUR, ONT.

Purchasing Agent: W. E. Decker.

Hull 47, single-deck bulk freighter Mathews Steamship Co; 530 LBP; 58 beam; 12 loaded speed; 10,000 DWT; 3-cyl TE engs, 25½-41-67x42, 2100 IHP; 3 Scotch boilers, 13-6; keel May10/22; launch Aug15/22, est; deliver Sept15/22, est.

### THE PUSEY & JONES COMPANY, WILMINGTON, DELAWARE

Vice-president and general manager: W. G. Coxe.

State of Maryland, hull 1021, comb str, bay or sound type, Seaboard Bay Line Co; 320 LBP; 42-6 beam on 10′ WL, 58 over guards; 14-6 mean draft; 18 miles speed; about 800 DWT; 4-cyl TE engs, 3000 IHP; 4 Scotch boilers, 13-3x11-6; keel Mar 7/22; launch July25/22, est; deliver Oct15/22, est.

State of Virginia, hull 1020, comb str, bay or sound type, Seaboard Bay Line Co; sister to above; keel Mar 1/22; launch Aug22/22, est; deliver Nov18/22, est.

### STATEN ISLAND SHIPBUILDING COMPANY, STATEN ISLAND, NEW YORK

Purchasing Agent: R. C. Miller.

No name, hull 740, ferryboat Erie R R Co; 206 LBP; 44-1 beam; 17-4 loaded draft; 1538 gross; rec engs, 1200 IHP; 2 Scotch boilers, 12-9x12-9; keel Aug/22, est.

No name, hull 741, ferryboat City of New York; 215 LBP; 45 beam; 18 loaded draft; elec drive, 1900 IHP; 4 B&W WT boilers, 8000 sq ft HS; keel Aug/22, est.

No name, hull 742, ferryboat City of New York; sister to above; keel Aug/22, est.

No name, hull 743, ferryboat City of New York; sister to above; keel Aug/22, est.

Hull 744, Hudson River vehicular tunnel, erection, launching and delivery of river shaft, New York side; keel Aug/22, est.

Hull 745, Hudson River vehicular tunnel, erection, launching and delivery of river shaft No. 1, New Jersey side; keel Aug/22, est.

Hull 746, Hudson River vehicular tunnel, erection, launching and delivery of river shaft No. 2, New Jersey side; keel Aug/22, est.

### SUN SHIPBUILDING COMPANY, CHESTER, PENN.

Purchasing Agent: H. W. Scott.

Agwiscot, hull 42, tanker A. G. W. I. S. Co; 480 LBP; 65-9 beam; 26-7 loaded draft; 12 loaded speed; 12,500 DWT; single screw QE engs, 4300 IHP; 4 SE Scotch boilers, 15-10 x11-11¼; keel Dec23/20.

Passenger vessel Inter - Island Steam Navigation Co., Honolulu; 345 long; 46 beam; 32 deep; 16½ speed; 4-cyl TE engs, 5000 IHP; 4 B&W WT boilers; to carry 434 passengers; keel May16/22; launch Sept30/22, est; deliver Dec24/22, est.

### THE TOLEDO SHIPBUILDING CO., TOLEDO, OHIO

Purchasing Agent: H. M. Ives.

No name, hull 174, cargo Kinsman Transit Co., Cleveland; 590 LBP; 60 beam; 20 loaded draft; 12 mi loaded speed; 12,000 DWT; TE eng, 2000 IHP; 3 Scotch boilers, 13-6; keel Aug/22, est; launch Nov/22, est; deliver Apr15/23, est.

### THE CHARLES WARD ENGINEERING WORKS, CHARLESTON, WEST VIRGINIA

Purchasing Agent: E. T. Jones.

Gen'l Frank M. Coxe, hull 17, river str War Dept; 144 LBP; 28 beam; 9 loaded draft; 16 miles loaded speed; 175 DWT; TE eng, 1050 IHP; 2 Ward WT boilers, 2094 sq ft heating surface; keel July 16 / 21; launch Mar3/22; deliver Nov1/22, est.

Gen'l John McE. Hyde, hull 18, river str War Dept; sister to above; keel July18/21; launch Mar11/22; deliver Nov1/22, est.

Destrehan, hull 19, sternwheel towboat Pan American Petroleum & Transport Co; 136-6 LBP; 32 beam; 5 loaded draft; simple HP non-condensing eng, 18 in dia by 7 ft stroke, 225 lbs WP; 4 Miss River type boilers, 44 in dia; keel Mar15/22; launch June1/22; deliver July20/22, est.

No name, hull 20, sidewheel car ferry Missouri-Illinois R R Co, subsidiary of St. Joseph Lead Co; 285 LBP; 54 beam; 5 loaded draft; 820 DWT; simple HP non-condensing eng, 22 in dia by 8 ft stroke, 200 lbs WP; 6 Miss River type boilers, 44 in dia, 26 ft long; keel June8/22; launch Aug20/22, est; deliver Sept 17/22, est.

## Recent Repairs

### BETHLEHEM SHIPBUILDING CORPORATION, LTD., UNION PLANT

Miscellaneous: S. C. T. Dodd, S. O. barge No. 95, F. H. Hillman, S. O. barge No. 91, Coalinga, San Pablo (extensive), Los Angeles, Mojave, Venetia, Hauraki, San Joaquin, El Segundo, Harvard, Bessie Dollar, Katherine, Quinault, Sinaloa, Cuba, Martha Buehner, Daisy, Richmond, Piru, El Lobo, Algonquin, Mexico, Wyadda, Healy Tibbitts, Matsonia, Yellowstone, Lyman Stewart, J. A. Moffett (extensive), Annam, Johanna Smith, Relief, Hornet, China Arrow, Annie M. Campbell, Tjikembang, Ecuador, Royal Arrow, Hamer, Maui, El Grillo, W. S. Miller. Miscellaneous parts and equipment: F. S. Loop, Manukai, Santa Rita, Montebello, Georgina Rolph, J. A. Moffett, San Joaquin, Mexican, Natoma, Standard Arrow, La Purisima, Dewey. Machining paddle arms: San Pedro. Two desks: Matsonia. Winch: Liberator.

Electric welding on boilers: Sinaloa, K. R. Kingsbury. Painting top sides: H. F. Alexander. Repairing rail: Wilhelmina. Rewinding armature: San Francisco. Propeller and tailshaft: Pacific. Repairing bucket: Dredge No. 5. Boom: Olinda. Drawing stern tube: Ardmore.

### San Pedro Works

Extensive hull repairs, drydocking: S. O. barge No. 7. Engine repairs: J. A. Talbot, Grays Harbor. Boiler repairs: Carmel. Extensive engine, boiler and hull repairs, drydocking: Argyll. Machinery repairs: San Juan. Miscellaneous engine, boiler, hull repairs: Yorba Linda. Temporary repairs and diving work: Wm. S. McKenny. Deck gear repairs: Delco. Miscellaneous repairs: Crickett. Tailshaft work, drydocking: Smith, Vaughan.

## COLLINGWOOD SHIPBUILDING CO., LTD., COLLINGWOOD, ONTARIO

Bow damage: W. C. Franz. Bottom damage: Imperoyal, Glenisla.

## LOS ANGELES SHIPBUILDING & DRYDOCK CORPORATION, SAN PEDRO, CALIF.

Extensive emergency repairs to hull and machinery: Wm. A. McKenny. Hull repairs: Yale, Walter Luckenbach, Yngaren. Machinery repairs: Phyllis, Cape Romain, Steelmaker, Vaquero, Yale. Drydocking for inspection: Lily, Talbot (also minor repairs). Engine repairs: Sierra, Vaquero, Centralia (also hull repairs). Piping repairs: Yale, Bessemer City, Harvard. Minor hull repairs and machinery installation: Vaquero. Docking, cleaning, painting, minor machinery repairs: Black Swan, Ella A. (also hull repairs). Extensive reconditioning: City of Los Angeles. Examination of bow by diver: Clarmont. Docking, renewing propeller key, tightening propeller wheel: Pacific. Reconditioning for Coast Fishing Company: Barge 1910. Cutter repairs: Dredge San Pedro. Minor rigging repairs: Ella A. Extensive repairs to ladder: Dredge J. E. Upson.

## MOORE SHIPBUILDING COMPANY, OAKLAND, CAL.

Drydocking, cleaning, painting, miscellaneous repairs: James Johnson, Arctic, Pasadena, Lightship No. 76, President Harrison, Sonoma, Carfloat, S. C. T. Dodd, Frances, Eldorado, S. F. barge No. 4, Natoma, China Arrow, G. U. Hind, Argonaut. Engine repairs: Rainier, San Juan, Ecuador, Stockton, Santa Monica, Empire State (also deck). Engine, hull, boiler repairs: Standard Arrow, Shabonee. Drydocking, hull, engine repairs: San Francisco. Drydocking, general repairs: Ryder Hanify. Boiler repairs: K. R. Kingsbury.

## TODD DRY DOCKS, INC., SEATTLE, WASH.

Minor repairs: Kaga Maru, H. F. Alexander. Miscellaneous hull repairs: Florence Luckenbach, Willamette. Engine repairs: Santa Cruz, Carmarthenshire. Winch repairs: Edgar Luckenbach. Docking, cleaning, painting: Ruth Alexander, Wm. T. Lewis, President, West Jessup, Washington Tug & Barge Co. barges 23, 30. Miscellaneous repairs: Utopia, Indianapolis. Furnishing fuel oil parts: Victoria. Copper pipe repairs: Ixion. Docking, cleaning, painting, miscellaneous repairs: Remus. Scaling topsides, painting with red lead: Hawaii. Reblading turbines: President Jefferson. Remodeling into cableship: Dellwood. Damage repairs: President Madison. Casting propeller blades: Cordova.

## THE WINSLOW MARINE RAILWAY & SHIPBUILDING CO., INC., WINSLOW, WASH.

Drydocking, cleaning, painting, miscellaneous repairs: Brookdale (also drawing tailshafts for inspection), Charles F. Crocker (also making and installing new topmast and about 40 feet shoe), Horace H. Baxter, Monterey, Fulton (also removing and installing new propeller), Resolute, Providencia, Burnside. Docking for annual overhauling: Bainbridge. General repairs due to collision with SS. Tacoma, lining up crankshaft and other engine repairs: Monticello. Drydocking, cleaning, painting: Griffson, Melrose (also installing graving pieces). General overhauling: Fearless. Drydocking, miscellaneous repairs: Morning Star.

# Trade Brevities

Manufacturing Engineers Inc. announce that the name of their organization has been changed to Minot, Olsen & Thurber Inc. Their new address is 88 Broad Street, Boston.

* * *

Announcement has just been made of the consolidation of the Foamite Firefoam Company, with general offices at 151 Fifth Avenue, New York City, and O. J. Childs Company, Inc., of Utica, New York, in a program uniting these fire protection interests under a new and complete service organization. At a meeting of stockholders July 21, it was decided that the company will hereafter be known as Foamite-Childs Corporation and the following officers were elected: W. J. Childs, president of the Childs corporation, president; F. M. Watters, vice-president; E. Janeway, secretary; and F. J. Maginniss, treasurer. James C. Patterson will continue as a director in full charge of sales. It has been announced that there will be no change in the sales policies of the consolidating companies.

According to a statement recently issued by Marvin & Pleasants, 120 Broadway, New York, Louis O. Bergh is now associated with the members of that firm in the general practice of law.

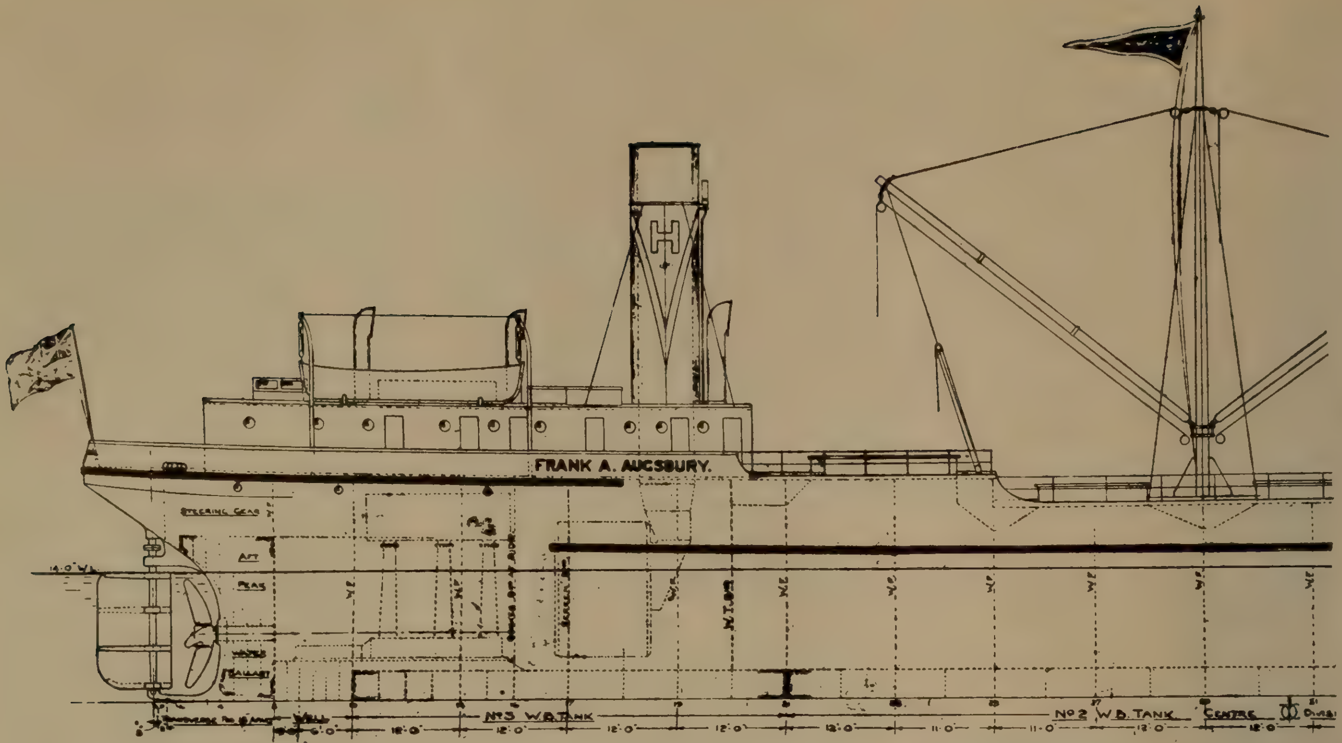
* * *

The Standard Stevedoring Company is a new firm in Seattle organized for the purpose of handling waterfront cargo. R. A. Clark, formerly connected with the North Coast Stevedoring Company, has been made superintendent. Headquarters have been established in the Spalding Building.

Under date of July 1 the C. C. Thomas (Navy) Post No. 244 of the American Legion, with headquarters at San Francisco, published a report of the progress made during the preceding six months on the program of work adopted at the first of the year. As of that date there was in the treasury about $400, with less than one per cent delinquent dues. From 135 the membership has increased to about 700. The Post has conducted an active campaign urging the necessity of an adequate navy and is strongly advocating that the navy personnel be the most efficient in the world. Much work has also been done with the object in view of making San Francisco Bay the principal naval base of the United States in the Pacific, and the Post feels that the granting of the $2,800,000 Naval Reserve appropriation and the passage of the Service Pay Bill were due in some degree to its efforts. It is urging that any subsidy bill passed should provide for 100 per cent United States citizen crews, and is actively participating in the California bond issue campaign. Maintenance of friendly relations with other Posts of the Legion is reported, and members are asked to comment on the work done, to aid in the efforts being made, and to bring in new members.

* * *

On July 26 the Canadian Pacific Steamship Company celebrated its thirty-sixth year of business as a commerce and passenger carrier across the Pacific. Since 1886 the service has expanded from the brig W. B. Flint of 800 tons "burthen" to a fleet of liners of about 465,000 tons gross, conspicuous among them being the Empress of Canada, 22,000 tons gross, and the Empress of Australia, 21,500 tons gross. The time of passage has been cut down from thirty-five days across the Pacific to a little more than a week.



Inboard profile of the steamship Frank A. Augsbury, under construction by Fraser, Brace, Ltd., Three Rivers, Quebec, for the George Hall Coal feet and the ocean draft 16 feet 6 inches. The vessels are 258 feet in length overall, 43 feet broad and have molded depth of 20 feet 6 inches.

## AN UNUSUAL HOUSE BOAT

MR. JOHN RINGLING'S new motor house boat Zalophus was recently launched at the yards of her builders, the Consoliidated Shipbuilding Corporation, Morris Heights, New York City.

The Zalophus is an all steel vessel, designed by Henry J. Gielow, also of New York, and powered with two Nelseco heavy oil engines of 180 horsepower each. The approximate combined weight of these engines is 20 tons. Oil capacity is 6200 gallons, giving a cruising radius of over 4000 miles.

The large deckhouse on the main deck is approximately 86 feet long. At the forward end a living room is arranged with stairway down to owner's suite. Dining room, pantry, servants' lounging and dining rooms and pantry follow; owner's lounge and smoking room aft; all sleeping rooms in owner's quarters, baths and toilet rooms are forward, followed by engine compartment. The after end is given up entirely to the crew's quarters. These are exceptionally complete, as they include staterooms for engineers and members of the steward's department, toilet rooms and two shower baths, one for officers and one for crew. The captain's room is arranged at the after end of pilot house, with toilet room and shower bath attached.

The electrical equipment of this vessel consists of two 2½ kilowatt Winton generating sets, with large type Edison storage batteries. This equipment will be sufficient to take care of all lights and all electrically operated, automatic and auxiliary machinery connected with the boat.

The storage space for supplies will be sufficient to enable this vessel to cruise at great distances from her base of supplies. The cold storage plant consists of several boxes, some in deckhouse for daily supplies, with others below for cold storage. An ethyl chloride machine of Clothel manufacture will keep these cold storage spaces refrigerated.

The small boat equipment of the Zalophus consists of several fast launches swung on the boat deck to be used by the owner and his party in making trips up small rivers not navigable for the larger boat.

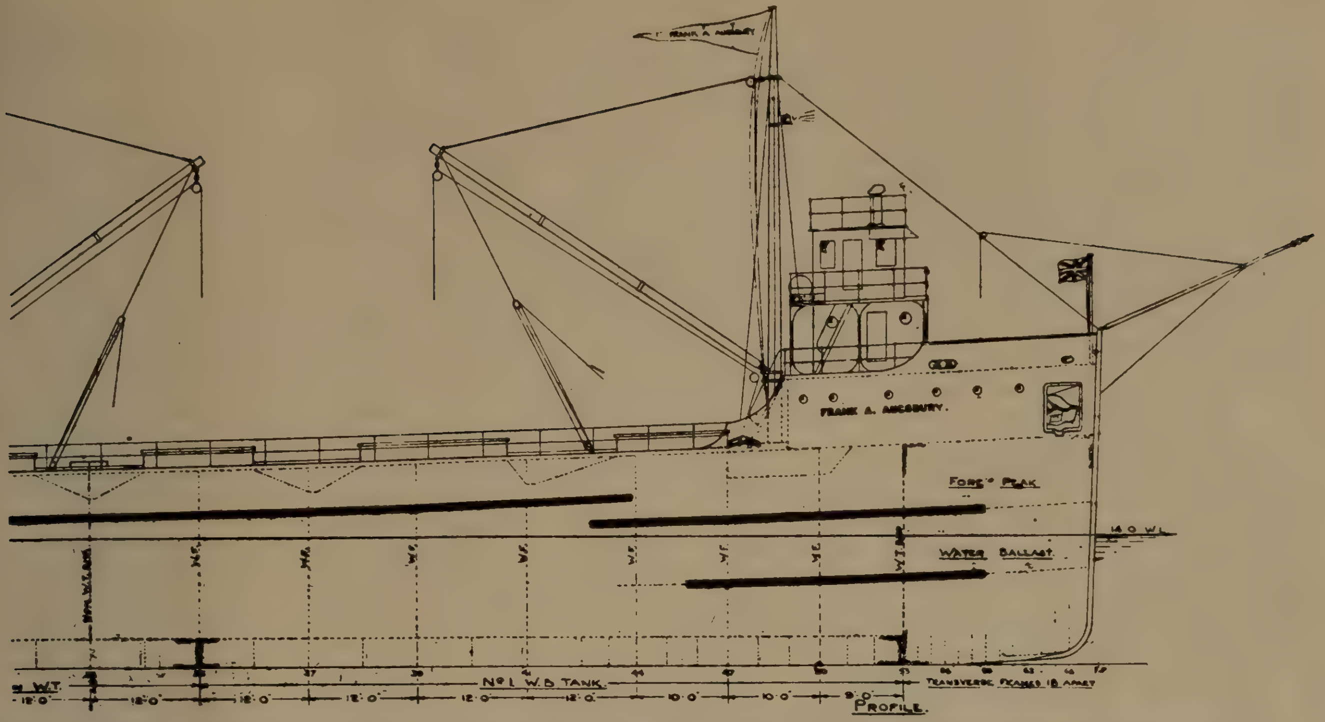
While Mr. Ringling's previous boat, the Vidofner, was considered a very complete and well equipped yacht, the Zalophus promises to be one of the finest examples of workmanship and design in a boat of its class to be delivered this year. It is 125 feet over all, 21 feet beam, and has a draft of 4 feet, capable of cruising in southern waters during the winter months and in northern in the summer.

All equipment for use in the Zalophus has been specified by the owner to be the best procurable at this time and of the most modern design. Appointments, decorations and hangings will be chosen with equal care.

## THE MARINE EXPOSITION

STEPS are being taken to complete final arrangements of the Second Annual Marine Exposition, to be held under the auspices of the American Marine Association, Inc., November 4 to 11, 1922, at the Grand Central Palace, New York City. The committees of the association are actively undertaking the duties assigned to them, in order to assure a successful gathering of the marine interests. Already space reservations for the November exposition presage an interesting and ambitious presentation of the varied phases of shipping activity, embracing shipbuilding and its allied branches, ship operation and the extensive group of supply organizations.

In order properly to co-ordinate committee activities, the American Marine Association has prevailed upon K. W. Heinrich, who has been identified with the Bethlehem Shipbuilding Corporation, Ltd., to accept the management and direction of the association. In this capacity Mr. Heinrich will execute the recommendations of the various committees looking after all details in connection with the exposition and association affairs, and secure the cooperation of other marine organizations to a degree where the November Marine Exposition is certain to command national attention, both from its business aspects, as well as the influence it will exert in furthering the interests of an Amer-



Company of Canada. The Frank A. Augsbury and three sisters are designed for Lake, canal, river and ocean service, the canal draft being 14
A more detailed description was published in the June number of Pacific Marine Review, page 379.

ican merchant marine. Mr. Heinrich has had broad experience in exposition development as a result of his work with the Bethlehem Shipbuilding Corporation, Ltd., and this experience, in conjunction with his extensive knowledge of maritime affairs, is expected to give to the American Marine Association many benefits of direct contact with the industry and its allied ramifications.

The exhibits committee of the Association has about completed its preliminary work and over the next few months it is confidently expected that definite space reservations will be had for the majority of the organizations that participated in the previous exposition, as well as many others who hitherto have not exhibited their products.

The membership committee has been industriously soliciting support from marine concerns that are not in a position to exhibit but are contributing their moral support to the successful consummation of the aims of the association.

# Deaths of a Month

**David Walter Rasor,** vice-president of Sudden & Christenson, with whom he had been connected for over twenty years, in San Francisco July 20.

**Captain Thomas Grant,** pioneer steamboat man and veteran pilot of Puget Sound, in Seattle July 17.

**Joseph A. Sloan,** during the war naval architect for the Sloan Shipbuilding Company, in Seattle July 24.

**David D. Faris,** manager of the marine department of the Westinghouse Electric & Manufacturing Company, in East Pittsburgh July 10.

**Samuel Napthaly,** vice-president of the Great Western Power Company, in San Francisco June 27. Mr. Napthaly had been connected with a number of large industrial enterprises, notable among them the Los Angeles Shipbuilding & Drydock Company, San Pedro, which he was instrumental in organizing in 1917.

**William A. Thompson, Jr.,** of New York, president of the Texas Steamship Company and vice-president of the Texas Company, July 24. Mr. Thompson served as a member of the committee of the American Steamship Owners' Association at Congressional hearings on the new shipping bill held in Washington, April 28, 1922.

**John Erickson,** well known bay and river boatman, in San Francisco August 6.

**Rear-Admiral Uriel Sebree,** United States Navy, retired, in Coronado, California, August 6. Admiral Sebree at one time was commander of the Pacific Fleet.

**Captain A. N. McAlpine,** in Yakima, Washington, August 1. Captain McAlpine had been active in the steamship business for more than forty years, for fifteen of which he was connected with the Puget Sound Navigation Company.

**William Duke,** veteran marine engineer of the Alaska Steamship Company's fleet, in Kirkland, Washington, August 5. He was chief engineer of the Cordova in 1914, when she steamed at full speed into uncharted waters to rescue officers and men of the revenue cutter Tahoma wrecked on Buldir Island of the Aleutian group.

**Yoshitaro Moriwaki,** manager of the Portland branch of Mitsui & Company, in that city July 7.

**Charles H. Ehlert,** general manager of the Oakland Launch & Towboat Company, in Oakland July 1.

**Captain Klaan Van Oterendorp,** one of the oldest and best known Pacific Coast ship masters, in Alameda July 1, at the age of 91. Captain Van Oterendorp, who had sailed the seas for more than fifty years, served the North German Lloyd for nineteen years, during which time he superintended the construction of their principal steamers on the Clyde. In 1876 he became director and manager of the Oregon Railroad & Navigation Company of the Pacific Coast. In 1885 he took command of the Oceanic Steamship Company's Zealandia and later of the Sonoma. He was more than seventy years old at the time of his retirement.

# IN THE SHIPPING WORLD

The Trans-Oceanic Company, representing the Ocean Transport Company of Kobe, has announced that that concern plans to place two steamers on the route between Seattle and North China and Japan. The ships, the Yojin Maru and the Yogen Maru, are scheduled to load at Seattle late in August, and, provided business conditions warrant, monthly sailings will be maintained. The company will also add, in the latter part of August, a fourth steamer to the Seattle-East Coast route of its United Kingdom service.

* * *

After a service of thirty years in the trans-Pacific trade, the Canadian Pacific liner Empress of Japan has been ordered laid up. Her last trip, completed in mid-July, constituted her 158th voyage from the Orient with a total of 2,500,000 miles covered. The addition of the new liners Empress of Canada and Empress of Australia was the cause of her withdrawal.

* * *

The Red Stack Tugboat Company has dispatched its big tug Sea Monarch to Seattle to engage in towing in Puget Sound indefinitely. Other boats of the fleet are to follow. Headquarters will be established at Seattle, according to a recent announcement of the company.

The three Lake type steel freighters purchased a short while ago from the Shipping Board by the Matson Navigation Company will be renamed upon their arrival in San Francisco. In the Matson nomenclature system all ships' names are Hawaiian words commencing with "M", and in order that the names of the new vessels may conform, it has been decided to call the Coverun the Mahukona; the Cowee will be known as the Makaweli, and the Cowboy will become the Makena.

* * *

Three additional steamers have been allocated by the Shipping Board to the Columbia Pacific Shipping Company, Portland, for use in the trans-Pacific service. This will give the company a fleet of seven ships and enable it to restore the schedule that it formerly maintained to North and South China ports, with semi-monthly sailings.

* * *

Norton, Lilly & Company are to represent the Pacific Mail Steamship Company's freight service at Baltimore and Philadelphia, Portland and San Diego. These agents are already handling a large volume of business for the Isthmian Line out of Baltimore and Philadelphia. On the face of it, it would appear that Norton, Lilly & Company are in the position of representing competing lines, but the presumption is that, inasmuch as the Isthmian Line's fleet has never been large enough to take care of all the business and it has been found necessary continually to charter ships to handle the overflow, the Pacific Mail vessels will in future carry the excess.

* * *

The American-Hawaiian Steamship Company has announced the addition of nine steel cargo steamers to its intercoastal fleet, which now totals twenty-seven. A regular westbound freight service from Baltimore to Pacific Coast ports with fortnightly sailings will be maintained, inaugurated by the sailing of the Georgian from Baltimore August 19. Effective with the sailing of the Sudbury from Mobile August 19 and from New Orleans August 26 the company will establish a monthly service from Gulf ports to Pacific Coast ports. Page & Jones will represent American-Hawaiian interests at Mobile and Richard Meyer Co. at New Orleans. Schedules of the North Atlantic service, which maintains weekly sailings from New York, Boston and Philadelphia, are being rearranged so that its previous regularity and fast time will in no way be impaired.

Announcement is also made that

Above is the Shipping Board liner City of Los Angeles being reconditioned at the yard of the Los Angeles Shipbuilding & Drydock Corporation for the Los Angeles-Honolulu service of the Los Angeles Steamship Company, which will be maintained by the City of Los Angeles and the City of Honolulu.

On the right is the North German Lloyd steamship Columbus, launched at the yard of F. Schichau, Danzig, June 17. She is of 32,526 tons gross, 750 feet long, 83 broad, 106 deep from bridge to keel. She will have accommodations for 2800 passengers (500 first, 500 second, 1800 third) and a crew of 794. She will have engines of 30,000 horsepower, which are expected to drive her at a speed of 20 knots. She will be the largest vessel under the German flag and the eighth largest vessel of the world. Her first voyage is expected to be made in April, 1923.

the United American Lines, managing agents, are opening a Baltimore branch in the Maryland Casualty Building.

* * *

In the interest of that part of the 1922-1923 crop to move through the grain elevator at terminal No. 4, the Portland commission of public docks recently reduced handling rates on wheat, the new tariff to cover during the free storage period. The rates now in force are: wheat received sacked and piled to be loaded on a vessel, $.90 a ton as against $1.10; wheat received in sacks that goes into the elevator to be bulked for loading, $.70 as against $.75; wheat received in bulk and loaded in bulk, $.50 instead of $.60. Provision was also made that any shipper handling 2,000,000 bushels in the cereal season in any one of the classes named will be charged cost plus 10 per cent for handling, if that would reduce the charge below the fixed tariff.

* * *

The President Madison, under operation by the Admiral Line, in July made a fast voyage from Yokohama to Seattle, her time being 10 days and 40 minutes. The vessel carried 5378 bales of raw silk, which were moved from the ship to the train for transportation within 5 hours and 40 minutes after arrival. The silk was shipped to New York via the Great Northern Railroad and arrived at its destination 14 days and 8 hours from the time it left Yokohama.

* * *

Swayne & Hoyt have placed two more ships, the Redondo and the Lydia, on the run between Pacific Coast and Gulf ports. This makes a total of nine steamships in the Pacific-Caribbean Gulf Line service operated by that company as against five a year ago.

* * *

Announcement has been made that the Steele Steamship Company, Inc., has purchased outright seven vessels of the former Green Star fleet, the smallest registering 8600 tons deadweight. After being reconditioned they will be operated in the Pacific, Caribbean and Gulf of Mexico service from Galveston, Houston, Mobile and New Orleans to Pacific Coast ports. The Los Angeles General Steamship Agents, who will act for the Steele Line, have severed their connection with Swayne & Hoyt, whose Pacific-Caribbean Gulf Line they formerly represented, and will handle all Gulf business via the vessels of the Steele Steamship Company. With the inauguration of the service in August, it is expected that a ten-day schedule will be maintained. No rate disturbance need be anticipated, as the Steele Line is a member of the Gulf Conference. The Steele interests are also endeavoring to perfect arrangements with the North German Lloyd whereby semi-monthly sailings may be inaugurated from New Orleans and Galveston to Bremen, thence to Cuba and Mexico and back to the Gulf, the service to begin in October with the heavy movement of cotton. Later it is hoped that combination passenger ships may be put on the run.

# The Charter Markets

## Beyfuss Freight Report

San Francisco, August 8, 1922.

Our previous report was dated the 7th of July, since when

Grain to Europe has been comparatively quiet, although six or eight steamers have been reported fixed; but several of them have only now been disclosed, and it is not unlikely the fixtures were made some time ago. Full cargo fixtures for wheat to U. K. or Continent are still being made on a basis of 37/6, and most of the steamers are being taken for September / October loading. The rates in the regular liners are quotable at slightly under these figures.

Several steamers have been taken for barley and early in the month 35/- was done. The latest fixture would indicate that the market was stronger, as 37/- was paid. Grain buying has been spasmodic. This, together with lack of other cargo, has weakened the freight rates, so today's rates for parcel shipments are quotable at 35/- for prompt loading and 37/6 for forward loading.

Lumber to the Orient: Again there has been no decided change, with not enough business showing to stiffen rates, and although space has been taken at $8 to $9 most of the liners are asking $9 to $10.

Lumber to Australia: This trade has also been practically without orders, although one large steel sailing vessel was fixed on private terms to load at Puget Sound for Sydney and Melbourne.

Lumber to South Africa: In this direction only one fixture is reported, a steamer at $20 for prompt loading.

Coal to North Pacific: There has been a slight activity in this trade, several steamers have been chartered, and rates are still ruling $3 from Australia; also there have been several new fixtures for coal from Cardiff at relatively the same freight rate.

The only unusual feature in the last month has been the chartering of about half a dozen steamers from British Columbia and North Pacific American ports to Montreal, Halifax and New York. These fixtures were made at about $14.50 to Montreal, $13 to Halifax and $12.50 to $13 to New York. They have practically all been Norwegian steamers, so the voyages obviously will be British Columbia to American Atlantic ports or American Pacific to Canadian Atlantic.

C. BEYFUSS COMPANY.

## Page Freight Report

San Francisco, August 10, 1922.

Our last report was dated July 7, since which time freight rates in grain in parcel lots by regular liners to U. K. and usual Continental range have declined appreciably, 32/6 per ton being the rate for August shipments and 35/- for September/October shipment. In full cargo fixtures for barley, Strauss & Company have taken the motorship Handicap at 35/-, a Japanese steamer at 37/-, and the British steamer Berengar at 37/-.

From the North the following steamers are reported as being fixed for wheat: Orient City, Devon City, Lloyd George, all at 37/6; a Japanese steamer at 36/6; the Luise Nielsen, Hanna Nielsen and Niels Nielsen, no rates being named on the latter.

There is no change in the lumber freight situation and low levels still continue with very little activity in full cargo fixtures. The only charter of importance is a Japanese steamer taken from the Northwest for South Africa by G. W. Gates & Company at $20 a thousand feet.

The space rates on Japanese squares to Japan have stiffened materially, not so much from any unusual demand for lumber as from heavy grain shipments having caused a scarcity of space. Space is asking $11 to $11.50 a thousand feet.

The steamers Unita and Bratsberg are both fixed to load lumber from Portland to Montreal, Dant & Russell being the charterers, terms private. It is also reported that the steamer Bjornstjerne Bjornson and Camilla Gilbert were taken by the South Alberta Lumber Company for lumber from Puget Sound or British Columbia to Atlantic U. S. ports or Canada. The first named is reported as going to Halifax at $13.25 a thousand feet.

For coal from Newcastle, N. S.

W., to San Francisco the steamer Hollywood has been taken by James Rolph & Company at $3.25 a ton.

The steamer Sequoia is chartered to take a cargo of redwood from Fort Bragg to Guaymas at $14 by the Union Lumber Company.

The steamer Ravnanger is reported as fixed on time, Pacific trading, on government form, at $1.15 a deadweight ton a month. The British ship Bellpool is chartered for coal from Australia to Talcahuano, thence with stiffening to a nitrate port at 23/9.

The United States Shipping Board has sold to Hammond Lumber Company the steamer Covena, and to J. H. Baxter & Company the Cowanshannock. The prices paid are not stated.

PAGE BROTHERS, Brokers.

* * *

## Shipping Board Port Bill of Lading

By resolution of June 29, the board of trustees of the Emergency Fleet Corporation approved the general clauses in the General Cargo North Atlantic U. K. form of bill of lading for use in all bills of lading covering shipments in Shipping Board services.

During the past half century bills of lading have become so complicated and so lengthy that neither the shipper nor the carrier could be sure of his rights until after a lawsuit. There had been a total lack of uniformity, and it was not unusual to find contradictory provisions on the same subject in one document. In an effort to remedy the situation the Emergency Fleet Corporation has prepared a number of general clauses which, it is believed, should be common to all bills of lading. The valuation per package has been increased from $100 to $250, and it is understood that this figure will cover 90 per cent of all commodities carried.

### Six Months for Claims

In most cases the new bill of lading can be used with the addition of a few special clauses necessary in the particular trade or trade route. The new form provides a simple, comprehensive clause permitting claims to be filed within six months after written notice of the loss is given to the carrier.

Shippers will be particularly interested in the omission from the form adopted of all references to theft and pilferage. It has eleven short sections in addition to the general exception clause and the provisions for payment of general average.

The subrogation clauses, by which the carrier becomes entitled to insurance placed on the goods by the shipper, are likewise eliminated.

The bill of lading conforms generally to the provisions of the export bill of lading recently promulgated by the Interstate Commerce Commission. It will be in general use in Shipping Board services soon.

### Text of Shipping Board Bill of Lading

The eleven sections are given below:

1. This shipment is subject to all the terms and provisions of, and all the exemptions from liability contained in, the act of Congress of the United States approved on the 13th day of February, 1893, and entitled "An act relating to the navigation of vessels," etc. This shipment is subject to the provisions of sections 4281-4286, inclusive, of the Revised Statutes of the United States.

2. The value of each package shipped hereunder does not exceed two hundred and fifty dollars ($250), unless otherwise stated herein, on which basis the freight is adjusted, and the vessel's liability shall in no case exceed that sum or the invoice value (including freight charges, if paid, and including duty, if paid, and not returnable), whichever shall be the least, unless a value in excess thereof be specially declared and stated herein, and extra freight, as may be agreed upon, paid. Any partial loss or damage for which the carrier may be liable shall be adjusted pro rata on the above basis.

3. The vessel shall have a lien on the goods for all freights and charges, and also for all fines or damages which the vessel or cargo may incur or suffer by reason of the illegal, incorrect, or insufficient marking, numbering, or addressing of packages or description of their contents.

4. If the vessel be prevented from reaching her destination by quarantine, conditions of weather or surf, shallow water, war, or civil disturbances, the carrier may discharge the goods into any depot or lazaretto, under suitable, available protection, dispatching notice thereof to the consignee, if named herein (at destination named), and otherwise to the shipper; and such discharge shall be deemed a final delivery under this contract, and all the expenses incurred on the goods shall be a lien thereon.

5. The vessel may commence discharging immediately on arrival and discharge continuously, any custom of the port to the contrary notwithstanding, the collector of the port being authorized to grant a general order for discharge immediately on arrival, and if the goods be not taken from alongside by the consignee directly they come to hand in discharging the vessel, the master or vessel's agent to be at liberty to enter and land the goods, or put them into craft, or store at the risk and expense of the owner of the goods, dispatching notice thereof to the consignee, if named herein (at destination named), and otherwise to the shipper, when the goods shall be deemed delivered and vessel's responsibility ended, but the vessel to have a lien on such goods until the payment of all costs and charges so incurred.

6. Full freight is payable on damaged or unsound goods, but no freight is due on any increase in bulk or weight caused by the absorption of water during the voyage. Freight payable on weight is to be paid on gross weight landed from vessel, unless otherwise herein provided or unless the carrier elects to take the freight on bill of lading weight. Freight prepaid will not be returned after the goods have been loaded on the vessel, goods and/or vessel lost or not lost. If, on a sale of the goods for freight and charges, the proceeds fail to cover said freight and charges, the vessel shall be entitled to recover the difference from the shipper and/or consignee.

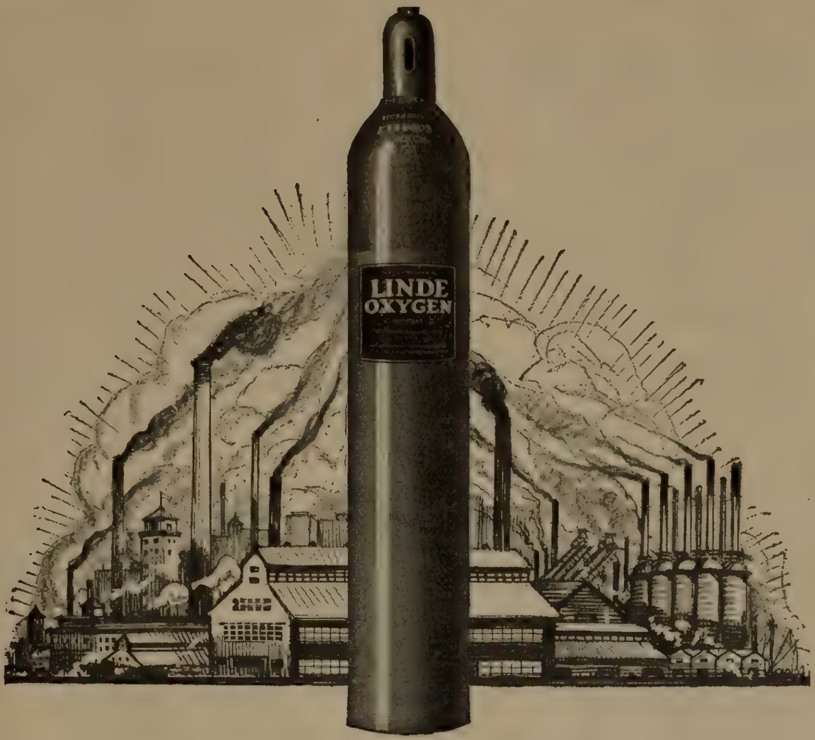
7. Goods on wharf awaiting shipment or delivery are at shipper's risk of loss or damage not happening through the fault or negligence of the owner, master, agent, or manager of the vessel, any custom of the port to the contrary notwithstanding.

8. This bill of lading, duly indorsed, shall be surrendered to the vessel's agent in exchange for delivery order.

9. Master porterage of the delivery of the cargo is to be done by the agents of the vessel; the expenses thereof, together with tonnage and shed dues, canal tolls, and charges, are to be paid by the receivers of the cargo.

10. Vessel shall not be liable for: Splits, shakes, chafing, or breakage of lumber or logs; damage to metal in slabs, bars, ingots, rods, hoops, plates, etc.; damage to or loss of any articles shipped loose and/or in bundles; loss of broken pieces of same, or for their respective marks; damage to fragile goods or goods not preperly packed. Repacking and recoopering shall be done at the expense of the goods, unless required as the result of the vessel's negligence.

11. Notice of loss, damage, or delay must be given in writing to the vessel's agent within thirty (30) days after the removal of the goods from



# Serving a 140-Mile Job

The Prairie Pipe Line Company, a Linde Oxygen user recently completed a 140-mile oil pipe line in Texas. Every joint was welded and it was a complete success. Linde Oxygen was used exclusively. Mr. N. E. Wagner, who superintended the job, wrote the Linde representative recently and said:

"I want to congratulate you, Mr. Wade, on the good service rendered by your company. I will try to get to Dallas soon and thank Mr. McCarthy personally, but should I fail to see him, I would appreciate it very much if you would advise him of the Prairie Pipe Line Company's and my own personal appreciation of, and thanks for, his good and prompt service at all times on this job. On all the four gangs on the one hundred and forty miles of line we were never delayed one minute for oxygen."

This is typical Linde Service, which provides a sure supply of Linde Oxygen even under the most difficult conditions, saving the user time and money.

No oxygen user, large or small, should close an arrangement for oxygen supply without first securing 1922 prices from the nearest LINDE District Sales Office.

**[30 plants and 50 warehouses]**

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0000

the custody of the vessel, or, in case of failure to make delivery, within thirty (30) days after the goods should have been delivered; Provided, That notice of apparent loss or damage must be given before the goods are removed from the custody of the vessel, and proper notation made on the receipt given to the vessel for the goods shall constitute the notice required herein. Written claim for loss, damage, or delay must be filed with the vessel's agent within six (6) months after giving such written notice. Unless notice is given and claim filed as above provided, neither the vessel, her owner, or agent shall be liable. No suit to recover for loss, damage, delay, or failure to make delivery shall be maintained unless instituted within one year after the giving of notice, as above provided for.

# About People

**Joseph E. Sheedy,** who has been acting vice-president of the Emergency Fleet Corporation since the death of the late A. J. Frey last June, has been appointed vice-president in charge of operations.

A native of Maine and an early graduate of the Massachusetts Nautical Training School, Mr. Sheedy has been practically brought up in the shipping and shipbuilding industries. As an officer of the Coast Guard (then the Revenue Cutter Service), he had training and experience practically identical with those of Annapolis graduates. Since resigning from that service in 1909 Mr. Sheedy has served with success as general superintendent of the Inter-Island Steam Navigation Company, Honolulu; as general manager of the Seattle North Pacific Shipbuilding Company, Seattle; as assistant to the president of the Seattle Construction & Drydock Company; and as manager of the Downey Shipyard Corporation, Staten Island, New York. In September, 1921, he was appointed European manager for the Emergency Fleet Corporation, with headquarters in London, but was recalled to act in Mr. Frey's stead during the latter's serious illness. Mr. Sheedy is a member of the load line committee of the United States Department of Commerce and belongs to the leading naval and mechanical engineering societies in this country.

**T. Komatsu** has assumed the management of the San Francisco offices of the Toyo Kisen Kaisha. For the past eight years Mr. Komatsu has been secretary to S. Asano, president of the company, and is regarded as an authority in shipping circles. He succeeds K. Doi, who is to return to an important position in the home office at Tokyo.

**K. Uyeda,** formerly in charge of the freight department of the Toyo Kisen Kaisha at San Francisco, has been made manager of that company's New York branch.

**George Allan** has been appointed staff surveyor for Lloyd's at the Panama Canal, this action terminating the appointments of the acting surveyors there. Mr. Allan was formerly one of Lloyd's surveyors at New York.

**E. E. Johnson,** until recently agent at Portland for the General Steamship Corporation, has opened offices in that city for the purpose of conducting a ship chartering and forwarding business. **R. P. Stanley,** who was also with the General Steamship Corporation, has resigned to take charge of the forwarding department for Mr. Johnson.

**C. D. Hubbard** has been made New England sales agent for the Bethlehem Shipbuilding Corporation, with offices at 141 Milk Street, Boston. Mr. Hubbard was formerly connected with the Harlan plant of that corporation and more recently with the central office in Bethlehem.

**Captain Inar Pedersen,** formerly traffic manager for Los Angeles harbor and prior to that traffic manager for the port of Seattle, has announced the formation of the Marine Supply Company, Inc., ship chandlers and general brokers. **E. J. Spear,** recently from Seattle, where for a number of years he was prominently identified with steamship traffic, is associated with Captain Pedersen. Headquarters have been opened at 852 Canal Street, Wilmington, California.

**T. Ishizawa,** the new manager of the Seattle branch of the Nippon Yusen Kaisha, has been well trained for his present position. Upon completing his schooling in Japan, he went to London, where he stayed three years, studying shipping and general business conditions in England. He also visited other European countries. Returning to Tokyo, he joined the organization of the N. Y. K. and since then has been connected with various branch offices of the company; was general manager of the passenger department at the home office during the war; and manager of the company's Tientsin office after the war until a short time prior to his appointment as Seattle manager. Mr. Ishizawa's father was also an official of the Nippon Yusen Kaisha.

**Arthur Cahill** has been elected president of Sudden & Christenson, San Francisco, succeeding the late E. A. Christenson. Mr. Cahill entered the firm as an errand boy.

**E. W. Hannay** and **H. H. Harris** have been appointed vice-president and general manager and assistant manager and chief engineer, respectively, of the Hanlon Drydock & Shipbuilding Company, Oakland, California. Formerly both were connected with the Bethlehem Shipbuilding Corporation's Union plant.

**H. S. Eaton,** until recently manager of the Portland office of the Pacific Steamship Company, has resigned to assume the management of that city's hiring hall for longshoremen. **T. B. Watson,** formerly of the Pacific Company's Seattle freight department, is Mr. Eaton's successor.

**A. P. Hammond,** Pacific Coast manager for the Atlantic-Gulf & Pacific Steamship Corporation, has been elected vice-president of the company and a member of the board of directors.

**Shipping Board Changes: J. Barstow Smull,** vice-president in charge of charters and allocations, elected president of the Emergency Fleet Corporation; **W. J. Love,** vice-president in charge of traffic, made vice-president and general manager; **H. S. Kimball,** New York, vice-president in charge of finance, resigned, to act as fiscal agent of the Fleet Corporation in New York; succeeded by his assistant, **Colonel Joseph W. McIntosh,** Chicago, who becomes a trustee of the Fleet Corporation, as does **Ralph V. Sollitt,** assistant to the chairman, who has been elected to represent the chairman's office; **Edward P. Farley,** Chicago, resigned to return to private business; succeeded by **Sidney Henry,** Baltimore, director of sales, who also becomes a trustee of the Fleet Corporation.

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The British Ministry of Shipping has paid to the United States Shipping Board $12,000,000 in final settlement of claims made by the board against the ministry and by the ministry against the board. These claims grew out of transactions during the war and after.

* * *

On July 26 the Canadian Pacific Steamship Company celebrated its thirty-sixth year of business as a commerce and passenger carrier across the Pacific. Since 1886 the service has expanded from the brig W. B. Flint of 800 tons "burthen" to a fleet of liners of about 465,000 tons gross, conspicuous among them being the Empress of Canada, 22,000 tons gross, and the Empress of Australia, 21,500 tons gross. The time of passage has been cut down from thirty-five days across the Pacific to a little more than a week.

* * *

The Atlantic Transport Line's passenger service between New York and London will be resumed in March next by the Minnewaska and Minnetonka, now building at Belfast, Ireland. They are fine, sturdy ships 600 feet long, of 21,000 gross tons each, and are oil burners. They are the forerunners of a new fleet of four practically identical ships to replace the famous "Minne" class sent to the bottom by torpedoes in the war. Each of the new ships will carry about 320 first class passengers, in addition to some 17,000 tons of cargo, and will cross the Atlantic from pier to pier in less than nine days. Like their famous predecessors, the ships are designed for great steadiness at sea.

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ANTIFRICTION
METAL
BY THE UNITED STATES GOVERNMENT

| Time in minutes | Temperature Fah'nheit | Pressure per sq. inch lb. | Revolutions | Speed of rubbing surfaces |
|---|---|---|---|---|
| 0 | 90 | 500 | 1550 | 2030 |
| 10 | 120 | 500 | 1550 | 2030 |
| 20 | 184 | 500 | 1550 | 2030 |
| 30 | 198 | 500 | 1550 | 2030 |
| 40 | 210 | 500 | 1550 | 2030 |
| 50 | 210 | 500 | 1550 | 2030 |
| 60 | 198 | 800 | 1550 | 1965 |
| 70 | 196 | 800 | 1550 | 1965 |
| 80 | 190 | 1000 | 1550 | 1965 |
| 90 | 186 | 1000 | 1550 | 1965 |

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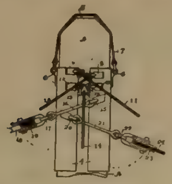
MANHATTAN BRIDGE PLAZA
BROOKLYN, N.Y.

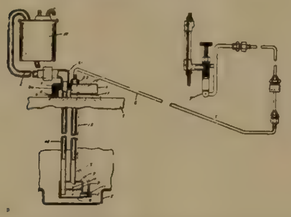
# SOME MARINE PATENTS OF THE MONTH

1,423,292. SPAR-TREE PROTECTOR AND FASTENING DEVICE FOR HIGH-LEAD BLOCKS. William R. Allen and Thomas K. McRea, Glacier, Wash.; said McRea assignor to said Allen. Filed July 18, 1921. Serial No. 485,778. 4 Claims. (Cl. 254—139.)



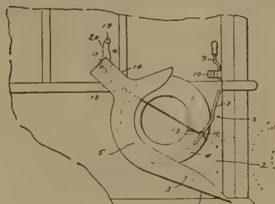
1. In combination, a spar tree, a pair of curved plates mounted on opposite sides of said tree and not entirely surrounding said tree, and a high lead block fastened on one side of said tree to the plate on the opposite side of said tree from said block and adapted to bear on the plate adjacent to said block when not under operative strain.

1,423,223. DEPTH-INDICATING DEVICE. Horace W. King, Ann Arbor, Mich. Filed Aug. 27, 1920. Serial No. 406,338. 16 Claims. (Cl. 73—54.)



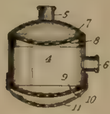
1. In a depth indicating device for liquids, the combination with a chamber communicating with a liquid at the full depth to be measured, of a second chamber below said first mentioned chamber and communicating therewith, means for introducing air into said second chamber, and a pressure gage communicating with said first mentioned chamber.

1,423,561. DEVICE FOR LAUNCHING RING LIFE BUOYS. Sofus E. Hansen, Seattle, Wash. Filed Mar. 25, 1922. Serial No. 546,871. 2 Claims. (Cl. 9—11.)



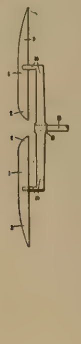
1. A ring buoy support including a housing for the buoy and an inclined trackway down which the buoy travels when released, a housing forming part of the support and adapted to receive a water-tight casing, a device carried by the housing and adapted to be connected to a plug in said casing, and a lever adapted to exert a pull upon said casing when operated to release the buoy.

1,423,923. DIVING APPARATUS. James Clendenin Eckert, Jr., Stamford, Conn. Filed Apr. 28, 1921. Serial No. 465,306. 3 Claims. (Cl. 61—70.)



1 In a diving apparatus of the kind herein described, a valve adapted for use and connection with the flexible tubing between the floating air vessel and the diver, comprising a receptacle with two partitions having valves therein opening away from the inlet at the top which is adapted for connection with the floating air vessel, the bottom of said receptacle containing perforations and a side outlet between said two partitions.

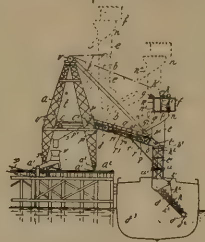
1,423,113. SCREW PROPELLER AND THE LIKE. Alexander Albert Holle, Hyde Park, London, England Filed Jan. 21, 1922. Serial No. 530,952. 4 Claims. (Cl. 170—159.)



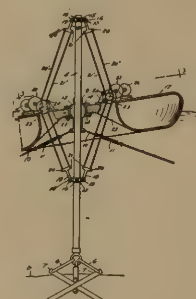
1. A blade for screw propellers, windmills, and like fluid operating or operated mechanisms comprising a central part and two end parts, the shape in plan of the central part being quadrangular and its shape in cross section being such that its chord gradually increases from its inner side and its camber and angle of incidence relative to the helical plane decreases towards its outer side; and the shape of each of the end parts in plan being such that it is cut away from its point of junction with the central part so as to bring its leading edge back until it meets its trailing edge, which is a continuation of the trailing edge of the central part, and the shape of each of said end parts in cross section being such that its chord, camber and angle of incidence to the helical plane are gradually reduced from their points of junction with the central part to their tips.

1,422,926. UNLOADING APPARATUS. George Charles Chadwick, Melbourne, Victoria, Australia. Filed July 13, 1918. Serial No. 244,745. 4 Claims. (Cl. 198—88.)

1. Unloading apparatus for vessels, comprising, in combination, a gantry; a conveyor arm hinged thereto at its inner end, and adapted to swing in a vertical plane; a non-rotating sleeve hinged to the outer end of said arm; a rotary elevator well rotatable in said sleeve portion; an adjustable extension hinged to the lower end of the rotary well; a flexible endless elevator guided by said well and extension, and including elevating buckets, adapted to take up material at the outer end of the extension; means for swinging the conveyor arm to raise and lower the sleeve and well; means for swinging the extension to vary the height of its outer end; inclined thrust-supporting stay-rods; upper hinge connections between the upper ends of said stay-rods and the conveyor arm; lower hinge connections between the lower ends of the stay-rods and the rotary well, said lower connections including a non-rotating ring pivoted to the lower ends of the stay-rods and encircling the rotary portion of the well, said stay-rods being arranged to maintain the well in a vertical and staunch position against the thrust caused by the pressure of the material on said buckets; and means for turning the rotary well to swing said extension laterally.

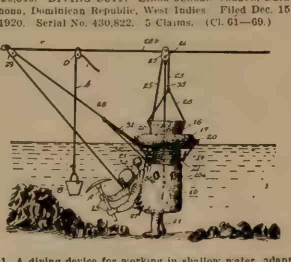


1,423,115. WAVE MOTOR. Oscar Hultberg, Seattle, Wash. Filed Apr. 11, 1921. Serial No. 460,452 4 Claims. (Cl. 253—10.)



1. In a wave-motor, the combination of a mast, means to maintain said mast substantially vertical, a floatative vessel, means for connecting said vessel to the mast to rise and fall with the waves, wheels provided on said vessel, cables extending through the vessel and connected above and below the same to said mast, means provided on said wheels whereby the latter are caused by said cables to be rotated in the same directions during both the upward and downward wave impelled movements of the vessel.

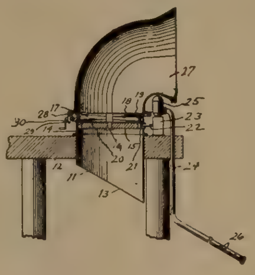
1,420,640. DIVING SUIT. Einar Jensen Valeur, Barahona, Dominican Republic, West Indies Filed Dec. 15, 1920. Serial No. 430,822. 5 Claims. (Cl. 61—69.)



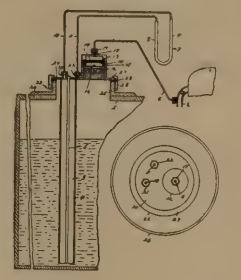
1. A diving device for working in shallow water, adapted to be worn as a suit, to permit the wearer walking about while submerged, said device comprising a vertical body having a buoyant extension at the top, a lateral flexible extension complementary to the said body and adapted to accommodate the torso of the wearer, said lateral extension having a helmet for accommodating wearer's head, and flexible arm sleeves, said body having legs adjacent to and below said lateral extension adapted to receive the legs of the wearer when positioned either in the said body or partly in said lateral extension to permit of his walking in either position of his body.

1,423,640. AUTOMATIC SURF-BREAKING APPARATUS. Herndon O Barlow, Los Angeles, Calif Filed May 5, 1921. Serial No. 466,890 4 Claims. (Cl. 61—6.)

1. In a surf-breaking apparatus, the combination with an air compressor, of a delivery tube extending therefrom and beneath the water and having a series of discharge apertures, a tubular base member mounted on the wharf and having an open end beneath the wharf, a tubular section on the base member, a transverse brace in the tubular section, a wind-wheel journalled in the brace member, a funnel to direct the wind to the wind-wheel, a countershaft to drive the air compressor, and a pinion on the countershaft in engagement with the wind-wheel.

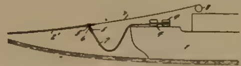


1,423,118. DEPTH-INDICATING DEVICE. Horace W. King, Ann Arbor, Mich. Filed Apr. 1, 1920. Serial No. 370,417 6 Claims. (Cl. 73—54.)



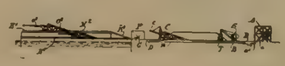
1. In a depth indicating device for liquids, the combination with a closed tank containing a liquid, of a chamber communicating with the air outside said tank and with the liquid in said tank, a suction pipe connected to said tank for producing a vacuum therein sufficient to draw air into said chamber for displacing the liquid down to the point of communication of said chamber with the liquid, means for preventing the passage of the liquid from said tank through said suction pipe, and a pressure gage in communication with said tank above the level of the liquid therein.

1,423,576. TOWING VESSELS. Thomas Spencer Miller, South Orange, N. J. Original application filed Mar. 22, 1918, Serial No. 223,931. Divided and this application filed Nov. 10, 1920. Serial No. 422,990. 13 Claims. (Cl. 114—235.)



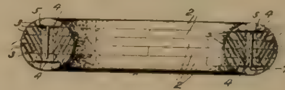
1. In combination, a towing vessel and a towed vessel, a hawser connecting said vessels, a line connected to said hawser at an intermediate point, and a yielding and recovering means connected to said line.

1,422,493. SYSTEM OF CONVEYING AND DELIVERING MATERIAL TO CARRIERS. Francis Lee Stuart, New York, N. Y. Filed Feb. 17, 1921. Serial No. 445,606. 8 Claims. (Cl. 214—14.)



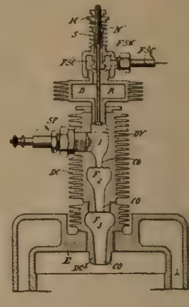
8. A system for handling material, comprising a source of material supply, a plurality of conveyers arranged in a group, a series of loading machines associated with said conveyers and movable from place to place while in operative relation with said conveyers and without interference with each other or with other machines, and means for delivering material on each side of the group from one or more of the inner machines of the group.

1,422,657. LIFE RAFT. Harry W. Broady, Bayside, N. Y., assignor to American Balsa Company, Inc., a Corporation of New York. Filed Jan 4, 1919. Serial No. 269,691. 5 Claims. (Cl. 9—11.)



1. A raft composed of a series of layers of light pithy wood which has been treated to make the same waterproof, said layers being connected together by dowels suitably driven into said layers in wedging relationship to hold the same together and a series of reinforcing plates embedded in said light pithy wood between adjacent layers thereof.

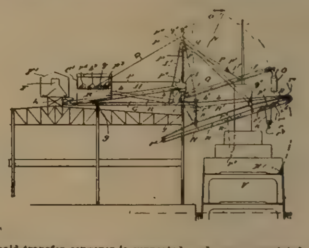
1,422,794. IGNITION DEVICE FOR INTERNAL-COMBUSTION ENGINES. Frederick Arthur Smith, Brasted, England. Filed Jan. 19, 1920. Serial No. 352,425. 10 Claims. (Cl. 123—143.)



1. An automatic charge-accumulating and regulating device for internal combustion engines, comprising a box, a fuel supply conduit leading thereto, a delivery conduit leading therefrom to the engine cylinder, said delivery conduit comprising a plurality of communicating chambers having baffles therebetween, a delivery valve in said delivery conduit adapted to be opened and shut by variations in pressure in the engine cylinder, and controlling means in the fuel supply conduit preventing the entry of as much fluid to the box as is evacuated therefrom while the delivery valve is open, substantially as described.

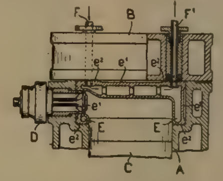
1,422,492. CONVEYER. Francis Lee Stuart, New York, N. Y. Filed June 18, 1920. Serial No. 389,878. 13 Claims. (Cl. 198—88.)

1. The combination with a pier shed having a roof, of a supply conveyer mounted on the roof of the shed, a transfer conveyer receiving material from the supply conveyer, a carriage movable along the roof and on which said transfer conveyer is supported, and means associated with said transfer conveyer for delivering material to a vessel adjacent the shed.

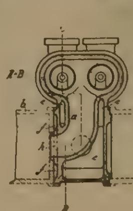


1,422,565. COOLING DEVICE FOR INTERNAL-COMBUSTION ENGINES. Carl Grunwald, Essen-Bredeney, Germany, assignor to Fried. Krupp Aktiengesellschaft Germaniawerft, Kiel-Gaarden, Germany. Filed Nov. 9, 1921. Serial No. 514,045. 4 Claims. (Cl. 123—173.)

2. A cooling device for internal combustion engines having a cylinder cover over its combustion chamber, said device comprising an exchangeable hollow member at the combustion end of the cylinder, said member having apertures for receiving the valve cages and spaces for cooling fluid, surrounding said valve apertures, recesses between the outer surface of the walls, of said hollow member, remote from said combustion chamber, and the adjacent parts of the cylinder and the cylinder cover, and connecting means between said recesses and between said combustion chamber and said recesses.



1,422,719. AIR-COOLED INTERNAL-COMBUSTION ENGINE. Rudolf Kronenberg, Ohligs, Germany. Filed July 27, 1920. Serial No. 399,417. 1 Claim. (Cl. 123—177.)



In an internal combustion engine, a valve casing, a cylinder head with a passage connecting the same and an annular cavity surrounding said passage and communicating with the atmosphere adapted for the circulation of atmospheric air therethrough and around the said passage by natural draught, an annular cavity between the said casing and head, and openings communicating with said last-named cavity.

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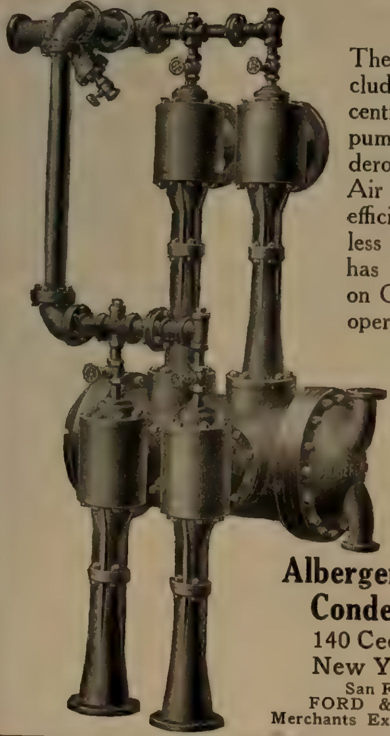
# ALBERGER Air Occluder



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# About People

**Captains S. S. Dalby and George Gildez** of Portland have become members of the Columbia River Pilots' Association. The addition of these two pilots makes a total of sixteen in the association.

**W. E. Martin** has recently been placed in charge of marine work for the Westinghouse Electric & Manufacturing Company on the Pacific Coast, with headquarters in San Francisco. For many years Mr. Martin has been interested in electric propulsion and auxiliaries for ships and is an active proponent of diesel-electric drive for certain types of vessels. Mr. Martin was educated in Denver, receiving his degree in electrical engineering from the University of Colorado. He is an associate member of the American Institute of Electrical Engineers and of the Society of Terminal Engineers.

**Captain Raymond Spear,** Medical Corps, United States Navy, who has been commanding officer at the United States Naval Hospital in Yokohama for the past three and a half years, has been ordered home. He will be succeeded by Dr. U. R. Webb of the Medical Corps, now on duty at the Naval Hospital at Mare Island, California. After a leave of several months, Captain Spear will probably be assigned to duty in some large naval hospital in the East.

**Frank E. Scott** has been appointed general western representative of the United States Lines, Baltimore Steamship Company, W. A. Blake & Company, Black Diamond Steamship Company, and Export Transportation Company. These companies operate Shipping Board tonnage from the North Atlantic to the United Kingdom and Continental European ports. Mr. Scott, who succeeds the late George W. Smith, will have his headquarters in Chicago where he is very well known.

**J. W. Ludlow,** of San Pedro, who has been assistant to E. D. Vincent formerly harbor engineer at this port has been placed in charge of all municipal construction and development work at Los Angeles harbor. Mr. Vincent was summarily dismissed at a meeting of the board of harbor commissioners held recently on charges preferred by Commissioner Kibele that progress of the work was unsatisfactory. Mr. Vincent, who refused to resign when he was asked to, made the countercharge that his removal was due to the fact that he questioned the advisability of contracting for $160,000 worth of patented asphalt-treated piles before the engineering department could ascertain that the process used would give satisfactory results. The contract was awarded over Mr. Vincent's protests.

## Shipping Notes

The Matson steamship Manulani recently made a new record for rapid cargo handling. She loaded in Seattle, Tacoma and Bellingham 11,530 tons of various products. After discharging these at the island ports she loaded 13,660 tons of raw sugar, which she delivered at San Francisco. This made a total of 25,190 tons of cargo for the round voyage, but the number of tons actually handled was 50,380, as each ton had to be handled twice, once in loading and again in discharging. The Manulani spent 16½ days in port, so that she averaged in the handling of this freight 3050 tons a day.

* * *

The Nippon Yusen Kaisha has inaugurated a regular semi-monthly passenger service between India and Japan. Six medium-sized steamers have been placed on the run, each with accommodations for about 40 first class, 25 second, 25 intermediate and 40 steerage passengers. The first sailing was scheduled for July 2 from Kobe to Bombay. The company heretofore has been operating two or three vessels on this run without fixed schedule, but owing to the steady growth of the passenger trade has decided to maintain a regular service.

* * *

The Pacific Mail Steamship Company has announced the extension of its intercoastal freight service to include Seattle, Tacoma, Astoria and Portland, Oregon. With the addition of four new 10,000-ton steel steamers, the Santa Malta, Santa Clara, Santa Oliva and Santa Paula, it will maintain a 21-day schedule to and from Pacific Northwest ports. The service was to have been inaugurated early in August by the Santa Malta sailing from the Eastern ports of Baltimore, Norfolk and New York, calling at Los Angeles and San Francisco, and on to the northern ports. The combined passenger and freight intercoastal service of the Pacific Mail will be maintained as in the past, San Francisco being the last port of call.

* * *

## A Record Run

WHAT is believed to be a record run for a geared turbine ship was made recently by the steamship Wytheville, operated by the Barber Line for the United States Shipping Board, when she traveled 8700 miles, from Balboa to Miike, Japan, without a single stop.

Captain John I. Stonstand, a veteran of the seas and skipper on this trip, feels sure he has established a record.

"I have never heard of a freighter, which pushed through the Panama Canal bound for the Far East, making the trip without a stop at Honolulu for fuel," said he. "The trip, requiring 37 days, was made without repairs of any kind to the machinery. We took the gear covers off once for inspection, but found that no adjustments of any nature were needed. The Wytheville, which is three years old, has made four trips to the Far East and to South America, a total distance of 150,000 miles, and there has never been any trouble with the equipment."

Captain Stonstand's praise for the geared turbine drive was substantiated by Chief Engineer W. C. Dowe, who added that his record trip of a vessel of 9700 deadweight tonnage had been made with an average fuel consumption of only 35.2 tons of coal a day.

The Wytheville equipped with a Type 18 General Electric marine geared-turbine set, developing 2500 shaft horsepower, is operated by the Barber Line for the United States Shipping Board.

This is Captain Stonstand's second experience with a G-E geared-turbine driven ship. He was in command of the steamship Liberty Glo, which ran into a mine off the Dutch coast on December 5, 1919, and had practically 140 feet of her bow end blown off.

# Pacific Marine Review

The National Magazine of Shipping

The S. S. Ala, an 8,000 ton freighter equipped with Westinghouse marine turbines and reduction gears, towed the Eastern Dawn (9,000 tons) 2,000 miles to port, through heavy seas and storm, at an average speed of 8½ miles per hour.

It is claimed that the S. S. Ala has broken the towing record. However true this may be, this towing feat is significant of the quality and dependability of after-war production.

Westinghouse Electric and Manufacturing Company
East Pittsburgh, Pa.

Hunt, Mirk & Company
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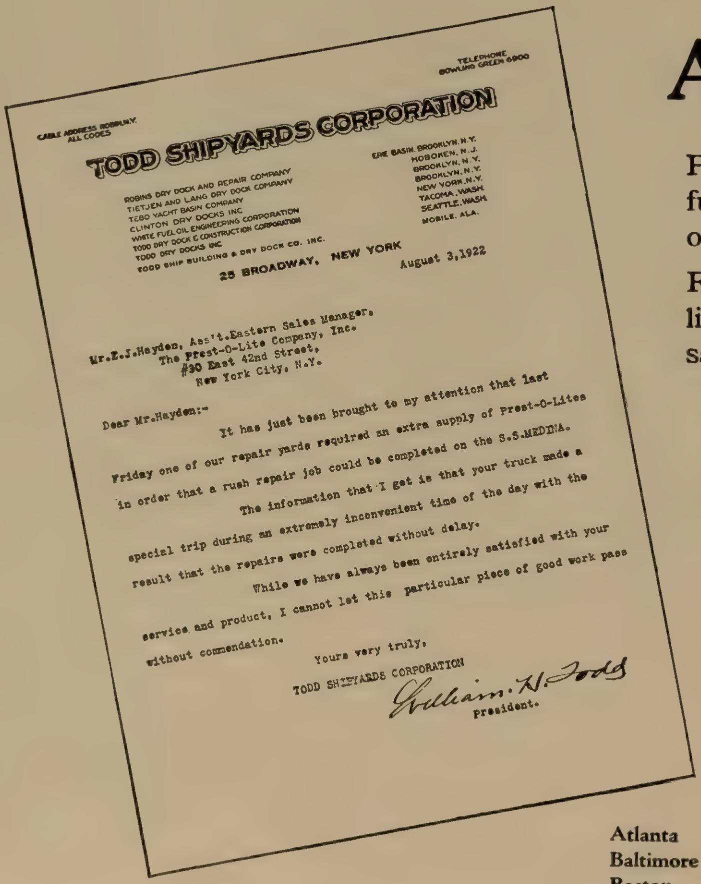
San Francisco, Cal.

Pacific Marine Review, Vol. 19, No. 10. Published Monthly at San Francisco. Entered as second class matter at the post office at San Francisco under the Act of March 3, 1879. $3.00 a year.



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# Pacific Marine Review

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J. S. HINES
Publisher

A. J. DICKIE
Editor

ANDREW FARRELL
Associate Editor

B. N. De ROCHIE
Business Manager

PACIFIC MARINE REVIEW,
THE NATIONAL MAGAZINE OF SHIPPING
576 Sacramento Street, San Francisco

339 at No. 30 Church Street,
New York City

500 Citizens National Bank Building,
Los Angeles

Official organ of the Pacific American Steamship Association

Entered as second class mail matter June 20, 1913, at postoffice, San Francisco, under the act of March 3, 1879.

Subscription price, a year (domestic) $2.00
(foreign) 3.00
Single copies .25

Published on the fifteenth of each month. Advertising forms close on the tenth and editorial forms on the twelfth.

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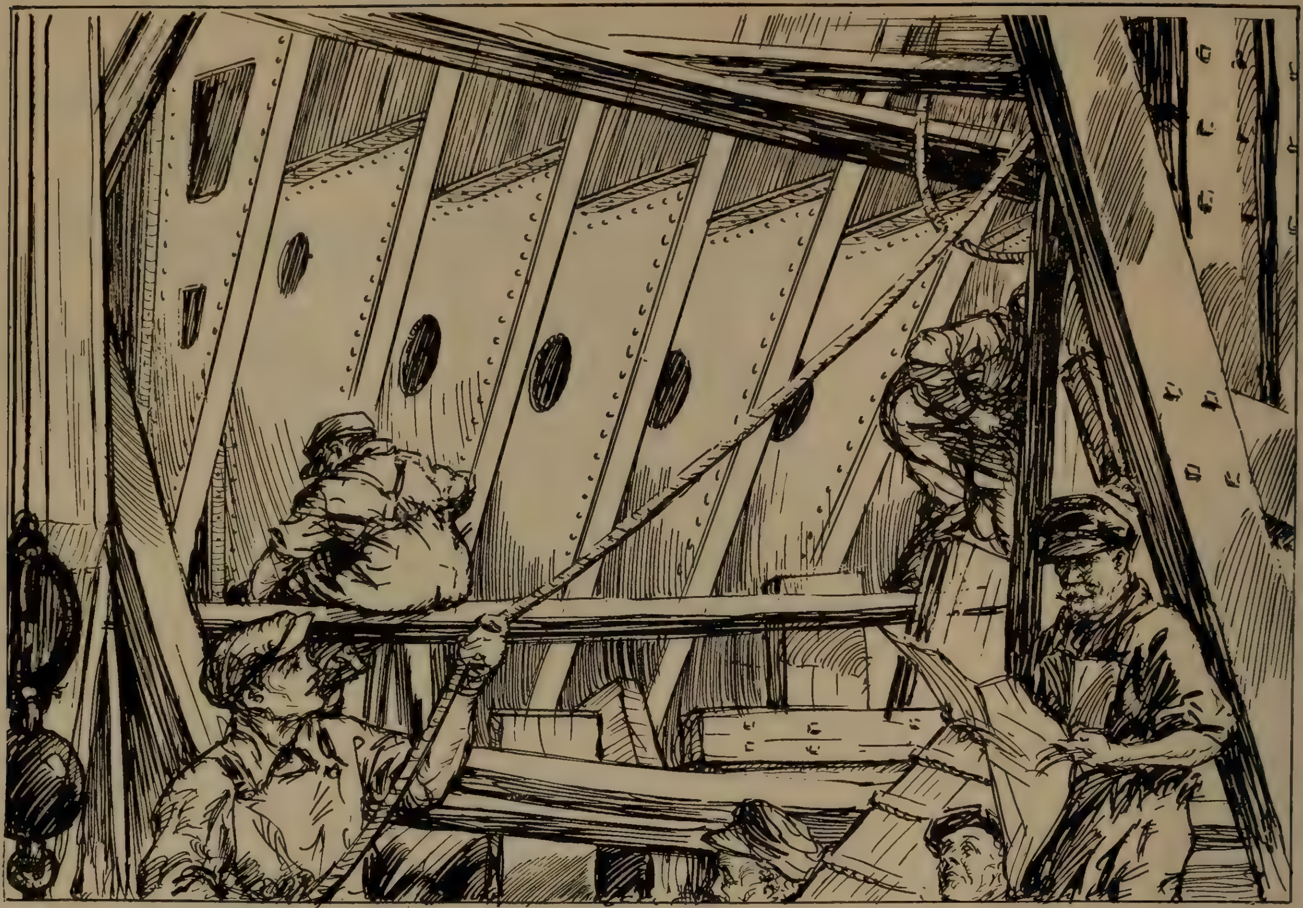

*"The Liner she's a lady, but if she wasn't made,*
*There still would be the cargo-boats for 'ome an' foreign trade."*
—Kipling

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# Pacific Marine Review

The National Magazine of Shipping

*October, 1922*

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## The Intercoastal Mess

IT is evident, in view of the numerous and lengthy statements issued by the Shipping Board explaining and justifying its libel proceedings against vessels of the Atlantic-Gulf & Pacific, that a considerable weight of public sympathy lies with the company, which was thrown into bankruptcy and probably will disappear as a factor in United States intercoastal shipping. If there were not a good deal of criticism of the board's apparently precipitate action there would be no occasion for such voluminous explanations.

That aspect of the situation may be shelved for the moment, however, in favor of Chairman Lasker's assertion, which there is no reason to question, that the A-G-P bought from the old board six steamers for $9,314,137 but paid only $195,000. Mr. Lasker might have added that the vessels have been employed in the United States intercoastal trade, have enjoyed large cargoes at what should have been remunerative rates and that considerably more than $195,000 certainly should have been paid on account. If Mr. Lasker had said all this he would be merely echoing what a large portion of the shipping public believes.

But aside from the company's singular policy in this regard, the Shipping Board appears to have acted in violation of its express pledge to the A-G-P that no action looking toward seizure would be taken prior to September 1 and that, if conditions on that day were favorable, a longer extension would be considered. That Mr. Lasker did so pledge himself appears indisputable; nevertheless, the ships were libeled August 12, and thereupon the company went into bankruptcy. In justification of its action the board, through Mr. Lasker, asserts that "it learned that the Atlantic-Gulf & Pacific Steamship Company was hopelessly involved;" yet to that statement one might retort that the company probably was as deeply involved when Mr. Lasker promised forbearance. If he made no such promise, then he should so state, for assertions that he did have not been challenged.

The A-G-P libel and bankruptcy are only two aspects of a troubled situation, that obtaining in the entering in the coastal trade. Rate wars, informal and at length formal, have vexed shipowners and shippers for months. Although in these struggles the spears of the participants apparently know no brothers, there does emerge the broad grouping of older and larger companies against the newer and smaller, with the result that the North Atlantic & Western, the pioneer in the service since the war and the sole operator of Shipping Board allocated tonnage, is again under fire by private owners who desire so-called government competition ended once and for all. No attack is to be expected on the Williams Line, however, because it has met its payments to the government much more promptly than did the A-G-P; yet the departure of the Williams Line would be welcomed by the older companies because it also has been a thorn in the flesh.

With the situation thus tangled, he would be bold indeed who pretended to say in which direction justice lies. But two statements may be made without much risk of contradiction; some stabilizing influence must be brought to bear on intercoastal shipping, to the end that the large, fast, well managed vessels of private companies shall not be exposed to rate cutting by intrinsically weaker lines; second, the Shipping Board must work in the open, it must not make pledges without due regard to all elements, but once made, the board's promises must be kept. Otherwise, it will forfeit public confidence, and that would be extremely unfortunate at a time when the future of the American merchant marine is in the balance.

## Whom The Shoe Fits

SECRETARY OF THE NAVY DENBY has been of true service to the world in speaking bluntly of the intentional damage of freight shipped in vessels flying a foreign flag. Such reports of his Yokohama address as have been received in the United States indicate that the secretary was not at all diplomatic (perhaps diplomacy is not one of his outstanding characteristics), but it is difficult to understand why any element in the Far East should take particular umbrage, in view of his express statement that he had no one nation in mind. Aside from that aspect of the situation, those gentlemen whom the shoe fits should be compelled to wear it in public.

In an interview given in Shanghai, Secretary Denby said that he had heard of four pieces of freight being damaged beyond all use by being dropped on a pier; these four pieces were the only portion of the cargo consigned to that port that did not belong to the nationals of the country whose flag the vessel flew; and, most singular, all the other cargo was landed safely. Tales of like tenor come to the United States from more than one foreign port. We have heard too many of them; it is time that the companies and vessels to blame were named in a manner that would brand them before the eyes of the world.

## Two Bits a Barrel

IT is to be hoped that the action of the Senate in rejecting a proposed duty of 25 cents a barrel on fuel oil is final and that no further effort will be made to revive the scheme. Even though the fuel oil duty should be quite dead, however, the attitude of

Congress in general is such as to justify the most careful attention of shipowners. In what appears to be a touching desire to comply with every demand of every person, the Senate and House are undoing one day all that they accomplished or attempted to accomplish the day before. In one breath they express their whole-hearted devotion to the American merchant marine; the next moment, as Winthrop L. Marvin made clear, they would impose a duty on oil that would nullify the assistance of a subsidy; and all the while they plan an unprecedented protective tariff that would practically destroy the foreign trade of the United States. If we impose a duty of 33 cents a pound on wool, how can Australia sell to us; if Australia cannot sell, how can it buy; what then becomes of the trade of the United States with the Commonwealth? Those who wish may repeat instances to their heart's content.

Prospects appear to be excellent for a decided change in the complexion of Congress after the first Tuesday after the first Monday in November.

## U. S. S. B. Sales

IF the tonnage of vessels sold by the United States Shipping Board is a trustworthy criterion, American shipping is in a decidedly better state than it was a year ago. During the six weeks beginning July 1 and ending August 15, 1922, the board sold 112,736 deadweight tons (74,501 gross tons) as compared with 359,338 deadweight tons (243,601 gross tons) sold during the entire fiscal year ending June 30, 1922. In other words, almost one-third as much business was done during six weeks as during the entire preceding year.

It is only relative tonnage, of course, that merits consideration. The absolute amount, when set off against the enormous fleet still remaining in the hands of the government, is too small to cause even the flutter of an eyelash. Sales, therefore, may indicate an improvement in shipping, but they are so small that, if continued indefinitely at the present rate, many vessels would be depreciated to the point of worthlessness before purchasers were found. If Congress wishes this condition to obtain (and it probably will obtain if the Subsidy Bill is not passed), Congress should at least explain itself frankly.

## Some Misplaced Optimism

TEIJI ISHIDA, managing director of the Taiyo Kaiun Kaisha, is leading a movement to persuade shipowners of Japan to tie up one-third of their tonnage. His proposal, which is not heard of for the first time, is now supported by the N. Y. K., O. S. K., T. K. K., Mitsui and Mitsubishi interests, it is said in Japan, and Mr. Ishida is quite optimistic as to prospects of success. But because foreign lines cannot be persuaded to join "it may be that we had better leave our shipping intact" in foreign trade, confining the attempt for the time being to protected routes into which foreign shipping cannot enter.

Mr. Ishida admits that similar attempts to effect a general agreement to tie up vessels have failed. One wonders why he believes that he can succeed this time. If all companies were of equal strength and were enduring equal losses, something might be accomplished; but if all armies were of equal strength, were equally well led and suffered in identical ratios, we should have no wars. Each commanding general expects to beat his opponent, just as each enlisted man expects to kill without being killed. So in commercial wars. Here is the reason declining trade always leads to rate cutting, in which some one company or group of companies believes it will have the advantage. If no tariff conference can maintain itself in these days, how can anyone, though speaking the tongues of men and of angels, persuade a strong company to forego its strength in favor of a weaker?

At the same time, Japanese shipowners have begun an agitation to obtain from the government a subsidy similar to those granted the N. Y. K., O. S. K. and T. K. K., to buy coal in common, with a view of obtaining it cheaper, and perhaps also to reduce wages of seamen, although the last proposal, according to Mr. Ishida, will not be carried through. What the government will do toward granting a general subsidy is uncertain; the probabilities are that it will do nothing of the sort; it does propose, however, to grant subsidies to aid in the construction of some large passenger liners of 20,000 tons gross and 20 knots or more in speed.

These plans to reduce losses and to seek government aid indicate that Japanese shipping is none too strong. Even the Osaka Shosen Kaisha, though paying a 5 per cent dividend for the first half-year (that is, at the rate of 10 per cent a year), drew on its dividend equalization reserve, and may be able to pay little or nothing for the second six months, especially because the directors oppose depletion of reserves hereafter.

## Shot For Breakfast

THE zenith of advertising has been attained by the gentleman who wrote copy for a large folder describing the cruise of the Cunarder Caronia, which will take American delegates to the Rome convention of the International Chamber of Commerce. The ship herself leaves nothing to be desired, as is evident from the ecstatic statements that "stateroom A28 has beds instead of berths to bring sleep at the end of a joyful day" and "cards and evening cigars are enjoyed in rooms where even a king might feel at home." And the tour—when he approaches that phase of his subject the writer wrings his hands in impotent yearnings for the pen of Shelley before he condescends to employ prose. But not everyday prose; only such word pictures as Ruskin might have envied will satisfy; and accordingly we have: ". . . Then the one-time rival of Athens, Aegina, temple-crowned. Dead ahead lies Salamis with all its memories, while to the east, hidden at first by the rugged flank of gray Hymettus, is the Attic plain, and in the center, the Acropolis, glistening in the sun. . . Cairo. We shall visit the bazaars, the mosques, the famous museum where mighty Pharaohs lie in state, the Sphinx and the zoological gardens. . . " And much more of a similar nature.

Mush of this sort gets one's royal and imperial goat.

# WATER SUPPLY OF THE PANAMA CANAL

## An Authoritative Article by the Chief Hydrographer, Especially Timely Because of the Recent Publication of Some Wild Reports

By R. Z. KIRKPATRICK*

DURING the past twelve months several articles have appeared in semi-scientific and shipping magazines in which was mentioned a deficiency of Panama Canal water supply; the trend of the authors was to accept the assumed deficiency as a fact, after a misapplied discussion of some officially published figures; they then advocated schemes for converting the canal to sea level at admitted expenditures of decades of years and hundreds of millions of dollars. One writer pessimistically asserted that in May, 1920, the water supply was so deficient that house spigot leakages had to be prevented by the governor; of course, the writer mistook the intent of an official circular to prevent heedlessly wasting municipal water, filtered and pumped at considerable expense.

Perhaps a resume of the water supply situation of the Panama Canal, past, present and future, may help to clear up some misunderstandings among Americans honestly interested in a great future for the canal. It may be accepted as a fact that the supply has been and is being carefully studied and that the authorities have the status of the question well in hand; and that as the economics of the situation indicate the wisdom of more storage the same will be recommended to Congress, which no doubt will provide the funds.

### Original Water Supply Estimates

The present canal structures, dams, lakes, etc., were based on water supply estimates of the board of consulting engineers, who functioned in 1906. They estimated a minimum flow of 1250 c. f. s. into Gatun Lake during the three driest months of the year; and a minimum annual flow of 5730 c. f. s. The estimated minimum dry season flow was cut by them to 1000 c. f. s., however, for safety. From this was to be subtracted:

| | Cubic Feet per Second |
|---|---|
| Evaporation | 710 |
| Leakage at gates | 240 |
| Infiltration, waste at locks, etc. | 77 |
| Lighting, power, etc. | 200 |
| Total | 1,227 |

Using 4 feet of storage (El. 86 to 82) and the 1000 c. f. s. of minimum three months' dry season inflow, they calculated the water supply would take care of the 1227 c. f. s. usages and provide 1350 c. f. s. for lockages, enough for 26 transits a day during the three driest months of the year. They estimated that when shipping required this amount it would be necessary to store more of the wet season water; and that their studies showed an Alhajuela reservoir would provide for 27 additional lockages; that the annual tonnage possible, both with and without Alhajuela reservoir was:

Upper end, Pedro Miguel Lock. West chamber being filled with water

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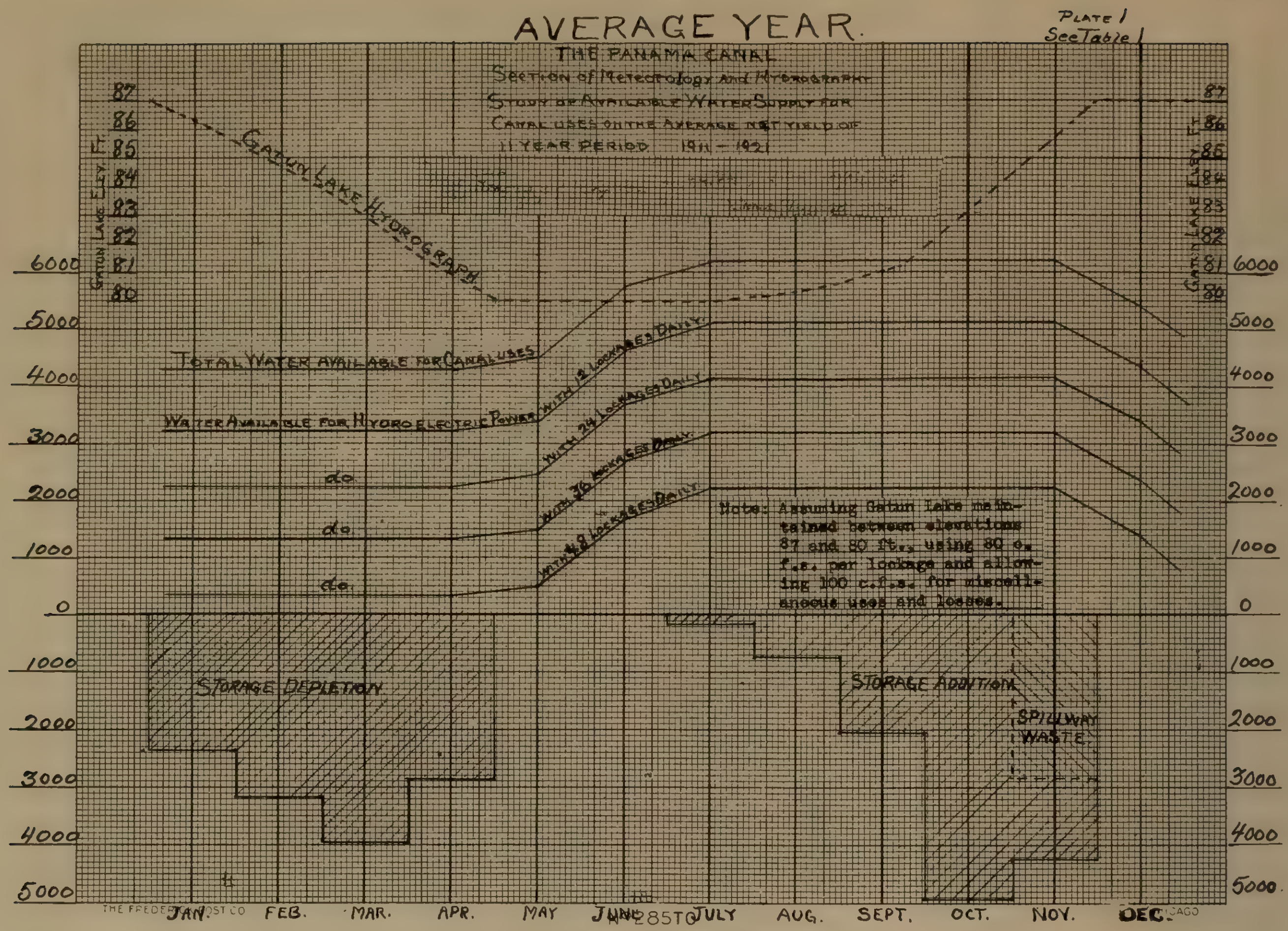
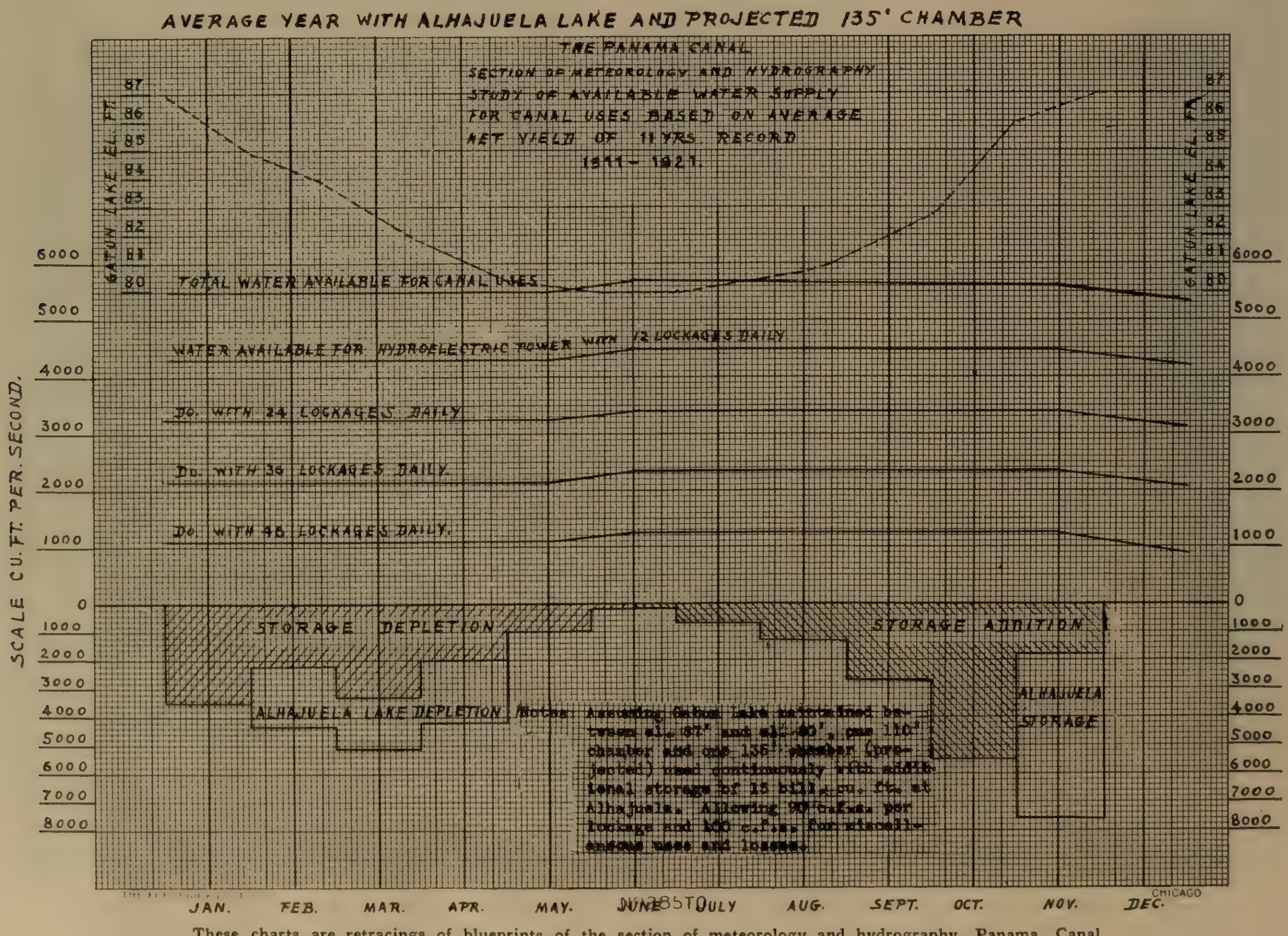
* Chief Hydrographer, The Panama Canal.





These charts are retracings of blueprints of the section of meteorology and hydrography, Panama, Canal

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| Tons per Lockage | Annual Tonnage without Alhajuela Dam | Annual Tonnage with Alhajuela Dam |
|---|---|---|
| 3000 | 28,470,000 | 58,035,000 |
| 4000 | 37,960,000 | 75,380,000 |
| 5000 | 47,450,000 | 96,725,000 |

They added that should it eventually be necessary to provide for further tonnage, the Chagres and its tributaries would furnish additional water, which might be stored and subsequently utilized.

### Present Water Supply Conditions

It should be remembered that runoff conditions changed when Gatun Lake was formed. We have, therefore, started a new term of hydraulic records beginning in 1911. And our records are conservative, inasmuch as since 1911 we have had several dry years with but one of the abnormally wet ones, for instance as wet as in 1909 or 1910. There are submitted the accompanying diagrams showing the actual water supply and water usage history of the Panama Canal since shipping began. There has been no actual shortage of water during this time. In the past two dry seasons, however, the storage between El. 87 and 80 has been drawn on considerably; in 1920 down to El. 81.65.

Usage for making power is the greatest. During the calendar years 1919 and 1920 power usages took 1470 and 1404 c. f. s. This is much higher than the consulting board anticipated; the development of many auxiliaries (such plants as the drydocks, pumps, shops and coaling plants), not included in the original canal project, is the cause. As a matter of fact the locks (expected by the consulting board to use the bulk of the power to be made) have actually taken but about 8½% of all power made in the fiscal years 1918, 1919, 1920 and 1921. How little this is may be made clear by comparison with the power system losses in the transformers and transmission lines, which are about 16 per cent of the power made. It seems that greatly increased water usages for shipping will not necessarily be paralleled by like increased water usages for making power for the locks.

The actual inflow and usage of water from Gatun Lake in the calendar year 1920, the driest year since the operation of the canal, are below:

| Inflow into Gatun Lake | | Bill. Cu. Ft. |
|---|---|---|
| Runoff above Alhajuela | ( 38%) | 65.21 |
| Yield from land area below Alhajuela | ( 44%) | 74.95 |
| Direct rainfall on Gatun Lake | ( 18%) | 31.38 |
| Total | (100%) | 171.54 |

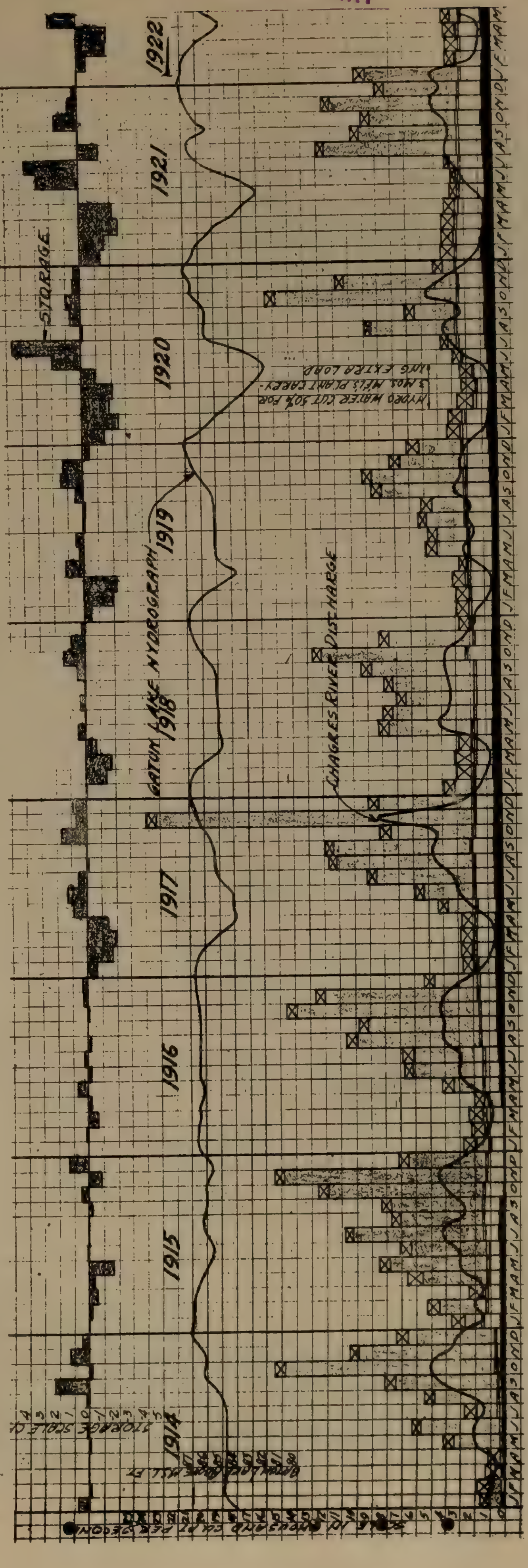
The usage or disposition of this was:

| | | Bill. Cu. Ft. |
|---|---|---|
| Evaporation from lake | ( 13%) | 22.40 |
| Gatun Lake lockages | ( 12%) | 20.87 |
| Hydroelectric power | ( 26%) | 44.42 |
| Spillway discharge | ( 47%) | 81.00 |
| Leakage and municipal water | ( 1.5%) | 2.45 |
| Increased storage | ( 0.5%) | .40 |
| Total | (100%) | 171.54 |

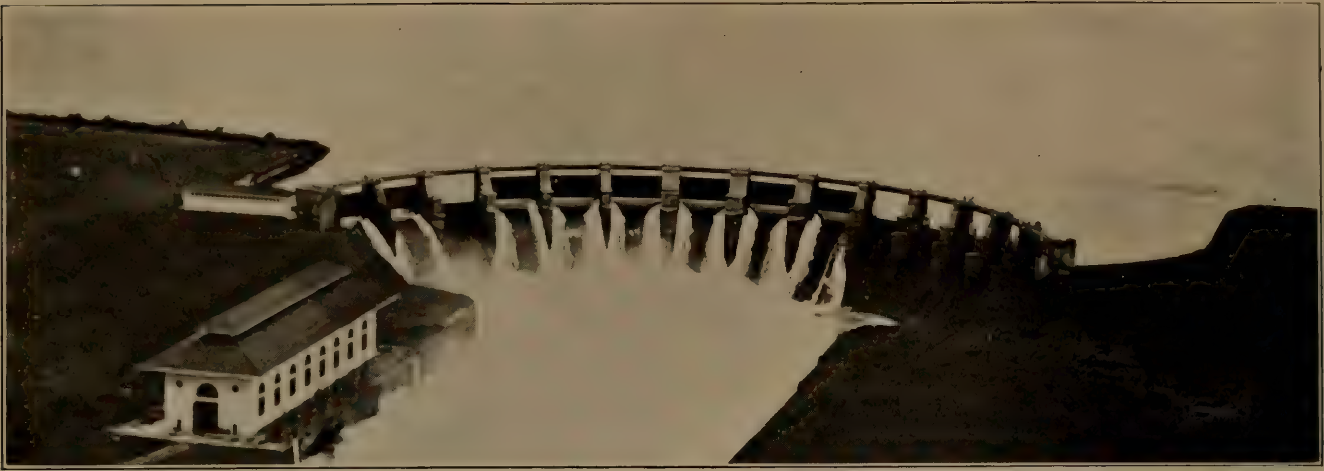
Nearly half of the year's water supply was wasted over the spillway—not needed. Yet the yield of water for the year was 12 per cent below the annual 1911-20 mean of 6183 cubic feet per second; and about 10,400,000 Panama Canal net tonnage transited the canal in 1920. Again, 26 per cent of the year's water was used for making power, and the Miraflores steam power plant was standing by, at two-thirds the hydroelectric plant's capacity, ready to be used if necessary.

### Future Storage Development and Usage

It has been seen that when a shortage of water does



A progressive chart of the uses and losses of Gatun Lake's water supply from 1914 to May, 1922. The black above shows storage. The cross-hatched rectangles at the tops of the lower columns indicate losses by evaporation; the gray portions below these rectangles show what passed over the spillways; the extremely small white spaces represent municipal use and leakage; next comes a larger white space representing hydroelectric uses; and at the bottom the black indicates lockage use. The relatively small amount used for lockage is the most interesting feature



Airplane photograph of Gatun Spillway, showing a discharge of 89,975 c. f. s. The hydroelectric plant is on the left. There are 14 gates in Gatun Spillway.—Official photograph

occur, due to increased business in the canal, it will be from lack of storage to tide over the needs of the dry season. That is, the 7 feet of storage between El. 87 and 80 in Gatun Lake will be insufficient pondage during the dry season, and since no more can be stored during the preceding wet season the excess must be wasted over the spillway. Careful records are kept of current hydrologies. When the stage mentioned above is reached, more and more power production will be switched to the Miraflores steam plant during these months. And the water that would otherwise be used in making power will be available for lockages.

When the economics of the situation warrant, storage developments can be constructed. By a relatively slight change at Pedro Miguel Lock in changing the system of drawing water, and improving navigation by cutting down surges in Gaillard Cut (at a cost of less than one million dollars), 1½ feet more over Gatun Lake becomes available as usable storage during the dry season—6.7 billion cubic feet more, or 985 extra lockages, may be taken care of, if all is used at the locks.

The fiscal year 1921 ratio of lockages to actual ships transiting the canal is 82 per cent; that is, many lockages are made two or more ships at a lockage. As the number of ships increases it will be possible so to dispatch shipping as to lower this ratio; that is, save much water by so-called tanden lockages. An example of such grouping occurred January 19, 1921, during the passage of the fleet. At Gatun Locks 18 lockages were made in passing 20 Navy ships, 8 commercial ships, 1 commercial launch, and 1 Panama Canal tug; 30 vessels in all.

When necessary the Alhajuela Lake and Dam can be constructed. By putting in a hydroelectric plant in the Alhajuela Dam (particularly with Miraflores steam plant in use), the power use of water can be entirely removed from Gatun Lake during the dry season and much water supplied for lockages in addition. Of course, the Alhajuela tail race water discharges into Gatun Lake, where it is again available for power or lockage use.

If further storage becomes necessary there are excellent possibilities in additional storages during the occasional super-wet years, carried over, if necessary, for several years. A dam in the Chagres arm of Gatun Lake just above the Gamboa Bridge can easily be built. There are also favorable reservoir sites in the Chagres above the proposed Alhajuela Lake. All these projects are along the ideas proposed originally for future construction by the board of consulting engineers, and it is believed their studies and estimates have proved as well advised as could be expected.

The new motorship Trolleholm (see page 573)

# PACIFIC COAST CURRENT TABLES

## Coast and Geodetic Survey Discovers a Local Wind Creates a Current Setting 15 Degrees to the Right of Its Own Direction

By G. T. RUDE*

IN the safeguarding of life and property on the Pacific Coast, a knowledge of the currents is of the utmost importance, for in the long stretch of coast line, more than a thousand miles, from the Mexican border to the Strait of Juan de Fuca, harbors are many miles apart, sailing courses long and periods of thick weather are of comparatively frequent occurrence.

During the years from 1900 to 1921, more than a hundred vessels were stranded or wrecked on the Pacific Coast of the United States, involving a loss of hundreds of lives and millions of dollars in property, and this in spite of the fact that our navigators on the Pacific Coast comprise an unusually able, keen and alert group of men. To a large extent this loss was due to the lack of knowledge of the currents on the Pacific Coast. Had there been adequate knowledge of these currents, a considerable part of this enormous loss would undoubtedly have been prevented.

### Two Types of Coast Currents

Coast currents are of two types: tidal currents, which are periodic, and non-tidal currents, which are in general produced by the wind, and are non-periodic. It is these non-tidal currents which are a menace to the coastwise shipping of the Pacific Coast.

Data for the predictions of tidal currents, since they are periodic, may be obtained from observations extending over a comparatively short period of time; but the non-tidal, especially the wind-driven currents, being non-periodic, require a long series of observations in order to give average conditions and allow of predictions of any degree of accuracy. To bring out to the full the effects of the currents it is necessary to make a systematic study of the currents all along the coast. By taking advantage of the five light vessels stationed along the Pacific Coast, the Coast and Geodetic Survey has at little cost secured observations which have brought out a number of important facts.

During the past few years appropriations for tidal and current work of the United States, while meager in view of the object sought and the vast coast line of this country, have been sufficient to permit securing current observations on the different light vessels along the Pacific Coast covering a number of months. In addition to this the navigators on that coast have co-operated with the Coast and Geodetic Survey in furnishing valuable information on forms furnished for the purpose as to courses and distances made good when coasting. The results secured from these observations, while limited largely to the vicinities of the light vessels, have warranted giving to the mariner considerable new information.

### Pacific Surveys Begun

Since the current data obtained from the light vessels limited our knowledge of the coastal current to the vicinities of these vessels only, it is advisable, as funds permit, to secure short series of observations from a survey vessel at critical points between light vessels simultaneous with observations at the light vessels and attempt to correlate the two series and thus obtain average conditions at the critical points. Such a survey is designed to bring out the effects of both the tidal currents and wind-driven currents along the whole coast.

A beginning along this line was made during the past winter, when the Coast and Geodetic Survey steamer Surveyor was detailed for a few months, between Alaskan seasons, to this work. The Surveyor occupied four stations: (a) just within the Strait of Juan de Fuca; (b) near the 100-fathom curve off Copalis Rocks just north of Grays Harbor; (c) near the 100-fathom curve off Tillamook Head; and (d) near the 100-fathom curve on Heceta Bank. The Surveyor was engaged on this work from early in January to the latter part of March, and it is intended, if funds permit, to extend this work later to the southward along the entire coast line, correlating these short series of observations with the longer series made at the light vessels, in order to determine the current conditions along the stretches of coast between the light vessels.

These current observations made along our Pacific and Atlantic coasts have brought out the important fact that, contrary to the belief of the mariner, a local wind creates a current not in its own direction but in a direction about 15 degrees to the right of the wind and a velocity in knots per hour of about 2 per cent of the velocity of the wind in miles per hour on the Pacific Coast and about 1½ per cent on the Atlantic. For example, a local south wind of 40 miles per hour on the Pacific Coast creates a current setting about north 15 degrees east and its velocity would be 40 miles X.02=0.8 knots per hour. These figures are not exact as taken from the observations but are sufficiently close for practical purposes and form a good working rule. The importance of the discovery that the set of the current is to the right of the wind direction lies in the fact that a wind blowing parallel with the coast may produce a current which tends to set a vessel on-shore, a fact which until now has been unsuspected by the navigator.

### Current Tables to be Issued

For a number of years by process of evolution as data became available, a considerable amount of information of interest and value to the navigator has been incorporated into Table 4 in the back of the Tide Tables published by the Coast and Geodetic Survey annually in advance. Within the past few years the importance to the mariner of accurate current data has been brought to the attention of Congress and the interest of Congress in this important matter is reflected in the increase of appropriations for securing the necessary series of observations to permit the Coast and Geodetic Survey to secure data on which to base conclusions and make predictions of coastal currents. This increase in data and knowledge of our coastal currents now warrants the separation of this material in Table 4 from the Tide Tables and the publication of separate volumes dealing with currents only. This is to be done for the calendar year 1923, when the current information will appear in two forms: "Current Tables, Pacific Coast, North America," and "Current Tables, Atlantic Coast, North America."

The Current Tables, Pacific Coast, will contain in

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[*] Chief of Division of Tides and Currents, United States Coast and Geodetic Survey, Department of Commerce.

Table I daily predictions of slack waters for the following places:

San Diego Entrance, California.
San Francisco Entrance, California.
Strait of Juan de Fuca Entrance.
Admiralty Inlet, Washington.
Seymour Narrows, British Columbia.
Sergius Narrows, Alaska.

In Table II will be given time differences for slack water at 330 subordinate stations, from Cape San Lucas, Lower California, to Cape Spencer and Skagway, Alaska.

Table III, in addition to a general description and explanation of coastal tidal currents, contains a description of the tidal current at each light vessel along the coast and also strength and velocity of the tidal currents at those light vessels for each hour of a tidal cycle, where the velocity of the tidal current is of sufficient strength to be of practical value.

Table IV briefly explains currents caused by local wind action and also contains short tables giving average resulting current direction and velocity due to local winds from each quadrant and of a velocity from 10 to 60 miles an hour.

### Co-operation Is Asked

In the preparation of these current tables all available observations have been used. In some cases, however, the observations were insufficient for obtaining final results, and as further information becomes available, it will be included in subsequent editions of the current tables. The co-operation of the mariner is requested looking toward the building up of accurate, comprehensive current tables for both coasts of the United States; he can render assistance of value in reporting his success in using these tables, as well as cases in which the tables apparently failed. The Coast and Geodetic Survey will welcome all suggestions from the mariner in improving the information furnished in these current tables.

The mariners on the Pacific Coast have rendered valuable assistance to the survey in the building up of the tables, the manuscript of which is now in the hands of the printer; their further co-operation and assistance will tend to improve each successive edition.

# RADIO AT THE MOUTH OF THE COLUMBIA

THE Federal government is making striking changes and improvements in the radio communication facilities of the district at the entrance of the Columbia River. These developments, necessitated by increasing traffic, include the enlargement and coordination of the two large stations at Youngs Bay and North Head and the establishment of a radio compass beacon station on the Columbia River lightship.

At the Youngs Bay station, the larger of the two naval plants near Astoria, a fifth steel mast is being erected. The equipment and machinery of the station is being changed and increased to provide for the employment of this additional tower. The station, too, is to be made into a remote control plant, the operation of which will be vested in the North Head station. The Youngs Bay radio will be used only for transmitting, while the North Head station will serve as the receiving unit for the Columbia River wireless combination.

### Work at North Head

Twelve tons of machinery and a carload of electrical instruments have arrived and are being installed at the Youngs Bay station by Federal experts and mechanics. By the time the steel pole is completed and the plant in order the force will shift its operations to North Head.

There another new mast will also be erected and the general capacity of the station largely increased. The construction program calls for a large new headquarters building, the foundation for which has already been laid; a new and larger power plant; the steel mast mentioned; and an underground cable from the station to the cable crossing of the Columbia River. This last project has recently been completed. It is expected to prove of great benefit in maintaining constant communication. The former wire line was continually suffering wire trouble during storms.

The coordinating of the two Columbia River stations and their enlargement is expected to increase their capacity enormously and to provide for the radio needs of the Astoria district for some time to come.

### Compass Beacon to Be Installed

About a year ago the Port of Astoria commission requested the Federal government to make more adequate provision for handling the growing business of communication on the Columbia River, as the development of Astoria as a port had brought an increase in the wireless traffic that was over-taxing the capacity of the stations.

In addition to this work, it has been announced that a Kolster radio beacon will be installed on the Columbia River lightship by the lighthouse department. This will be done at once as one of the first steps in the department's program of placing these beacons on all its property on the Pacific Coast.

The protection thus afforded is in addition to the two naval radio compass stations now guarding the entrance to the Columbia and assisting vessels in the coastwise traffic lanes, as well as those entering the river.

It is understood that the development of the radio beacon system and the resultant practice of carrying radio compasses on the vessels instead of at stations on the shore has received the hearty approval of many Columbia River shipping men and mariners and that the inauguration of the service from the Columbia River lightship has received their unqualified endorsement.

## TESTING PUMPING EQUIPMENT OF THE FIREBOAT THOMAS WILLETT

ON July 17 tests were made of the new pumping equipment that has been installed on the veteran New York City fireboat, Thomas Willett. This equipment consists of two 600 brake horsepower Westinghouse steam turbines, of the mechanical drive type, each of which is direct connected to a 12-inch Lea-Courtney double-suction volute fire pump.

The average performance of the pumps, during the test which lasted six hours, was 9215 gallons a minute at 150 pounds' pressure and 7410 gallons a minute at 175 pounds' pressure, when operated singly, and 4690 gallons a minute at 300 pounds' pressure when connected in series and operated together. In all tests, the underwriters' requirements were greatly exceeded. The steam pressure was 185 pounds at the turbine and the suction head four pounds.

The equipment was purchased for the City of New York by Fire Commissioner Thomas J. Drennan. Similar equipment has been ordered to replace the present pumps in the James Duane, another fireboat.

# HISTORY OF THE CLIPPER SHIP NIGHTINGALE

## It is "More Romantic and Interesting Than That of Any Other Merchant Ship of Either American or Foreign Construction"

By F. C. MATTHEWS

The Nightingale getting under way off the Battery, New York, May, 1854, bound for Melbourne
From a lithograph by N. Currier

THE subject of this sketch, the clipper ship Nightingale, beyond question has a history more romantic and interesting than that of any other merchant ship of either American or foreign construction. Unique in the conception of her creation, in that the idea was artistic or aesthetic rather than mercenary, she stands alone in the annals of shipbuilding. When circumstances forced her to become a mere merchantman, she at once came to the fore prominently as a racing clipper in the tea trade; her subsequent career as a slaver, though short, was exciting, and was followed by her service in the Federal Navy during the Civil War; later still, she was the flagship of the Collins Overland (or Western Union) Telegraph Company's fleet of ten sailing and steam vessels operating in the North Pacific; further along she was again a general trader and finally ended her days as a North Atlantic lumber drogher under a foreign flag. She sailed on every ocean: the Pacific (or Behring) Sea knew her as far north as 65 degrees; the Indian Ocean had her keel cleaving its waters at the rate of 12, 14 and even 16 knots in the high latitudes of 50, 54 and up to nearly 56 degrees south; in the Atlantic, she has been to 58 off the Horn, while her last hailing-port, Krageroe, Norway, is about the same latitude north. It is probable that no other merchant sailing ship has approached the record of the Nightingale in this respect. The elements were not always kind to her and many a heavy claim underwriters had to pay, but her career of forty-two years of strenuous service is sufficient proof of the excellence of the material and workmanship that went into her construction.

### Building the Nightingale

The following account is from the Proceedings of the Bostonian Society: "A young Swede came to this country in 1851 with some money and the intention of building a craft to be fitted out for passengers to the World's Fair in London. For this purpose he located himself in Portsmouth, New Hampshire, and contracted with shipbuilders who had yards at Eliot, Maine, just opposite Portsmouth, for a ship of about 1000 tons with extensive cabin arrangements for passengers. The model of the ship was that of an extreme clipper. When nearly completed the projector fell short of money. Masts, spars and sails had all been contracted for and were in a state of forwardness. The mechanics concluded to complete the ship and then put her in the hands of Governor Goodwin of Portsmouth for sale, each contractor to take his pro rata of his contract."

It had been intended by the projector, a Swedish count, to put the ship on exhibition as a model American clipper, the commodious and beautifully fitted-up staterooms and saloons to be occupied by the passengers during the continuance of the fair. Only the best of materials were used in construction and all fittings were elaborate; in port she wore mahogany belaying pins; her rigging was capped with highly polished brass and the rail was richly carved and gilded. She was named in honor of Jenny Lind (known as the Swedish Nightingale), then in the zenith of her fame, and the ship's figurehead was a finely carved bust of the famous singer.

The Nightingale, after launching, was taken to Boston and sold at auction under mechanic's lien, on September 6, 1851. According to report, the purchasers were Messrs. Davis and the price was $34,500, whereas the actual cost of the ship had been nearly $70,000. Contracting builders received their money in full. The prominent Boston shipping firm of Sampson & Tappan was soon thereafter reported as having become owners at the price of $75,000.

### Specifications of the Clipper

The Clipper Ship Era gives the dimensions of the Nightingale as 178 feet by 36 feet by 20 feet. According to the American Record of Shipping, the figures are: 160-1/2 by 34-1/3 by 19 feet. Her draft was 19 feet. She had two decks. The original figure of tonnage was: 1060, which was subsequently reduced by new measurement rules to 722 tons, and again later to 657 tons. Her ends were sharp, as was also her bottom, and her 36-inch dead rise at half floor was equalled by that of the clipper Game Cock only. She was particularly handsome in all respects, hull, spars and rigging. On being met on one occasion, just arriving at Shanghai from Canton, by the clipper John Wade outward bound, an American merchant, George Francis Train, passenger on the latter, wrote home in mentioning the circumstance: "I know the ship: it is the clipper launched for the World's Fair, the Nightingale. Next to a beautiful woman, give me an American clipper. I like them both; but as I have not yet seen the former in the Indian and Asiatic seas, I am the more delighted to find a fellow countryman in the latter, for the one sits as proudly on the water as a Western nightingale at her piano." On the occasion of her last visit to San Francisco, which was in 1876, she was described as being so beautiful and dainty as to make a sailor weep for joy and there was no one better qualified to judge of the appearance of a vessel than was Tom Griffin of the "Along the Wharves" column in the Daily Alta California. The Nightingale was, in fact, a large yacht, ship-rigged.

Ownership now being settled, the clipper was put on the berth at Boston for Sydney, becoming the pioneer in the trade between United States Atlantic ports and Australia. Clearing on October 17, 1851, for "Oceania and China," and sailing the day following, she went out under command of the veteran navigator, John H. Fiske. In common with others sailing about the same time, she encountered adverse winds and unfavorable weather in the North Atlantic and it was not until the thirty-ninth day out that she was up with Cape St. Roque. She crossed the meridian of Greenwich in 39:50 south, 17 days from St. Roque, having experienced very variable weather, calms, light winds, squalls, strong winds and gales; best day, 263 miles. It is noted, however, from Lieutenant Maury's list of 268 voyages over this particular route made during a period of over ten years, the Nightingale's 17-day run was beaten only four times and equaled but twice, and of these six runs, one only was made during a corresponding season of the year. The meridian of the Cape of Good Hope was crossed in 40 degrees south, 60 days out from Boston, the log book showing for that day 278 miles in strong gales. Came down from royals to double reefs. Easting was run down between 44 and 45:30, the best day (of about 23½ hours), being 290 miles in strong winds, and the best six consecutive days, 1640. The whole passage from Boston to Sydney was 90 days and was disappointing to all concerned, but that portion of the run from St. Roque to port, 51 days, was very fair, although in a subsequent trip the Nightingale made it in 44 days.

### First Showing Unsatisfactory

From Australia the Nightingale proceeded to Canton and thence to Shanghai to load tea for London. She found on the coast as competitors the British clippers Stornaway, Chrysolite and Challenger and the Americans, Challenge and Surprise. Of these, the two first and the last named had made the same voyage the year previous; Nightingale and Challenger were at Shanghai, the others at Whampoa (Canton). The season was getting to be the worst for a voyage down the China Sea, and although the Nightingale left only a few days later than the others, it took her the excessively long time of 61 days from Shanghai to getting clear of Sunda Straits. Thence to London, however, she was but 72 days, on this portion of the voyage beating all but the Challenge, though on the whole voyage she was 19 days slower than her tardiest competitor, Challenger. She ran from the Cape of Good Hope to Deal in only 39 days. It was said at the time that Captain Fiske took the wrong passage down the China Sea; however that may be, he was so chagrined over the result of his first round voyage that he left the Nightingale on arrival at London. Captain Fiske later had the Dashing Wave, in which he made some fast runs. The owners of the Nightingale sent Captain Samuel W. Mather to London to take command, and were so well satisfied of the ability of their ship to sail that they offered to match her for £10,000 sterling on a voyage to China and return, but there were no responses.

The second voyage of the Nightingale was a round from London to Shanghai and return. On the outward run Captain Mather was 80 days to Anjer and 112 days to Shanghai, beating everything but the American Challenge, which had 78 days to Anjer. In the South Atlantic, Nightingale had some very heavy weather, losing sails and having bowsprit sprung. From Shanghai to London she beat the British Challenger by two days. From London she crossed to New York and loaded for Melbourne in R. W. Cameron & Company's Australian Pioneer Line.

### Fast Passage to Melbourne

With some 125 passengers the Nightingale left New York May 20, 1854, and anchored in Hobsons Bay August 2 at 8 p. m., 75 days out. Had a tedious run of 29 days to the Line, but her time of 46 days thence to Melbourne was excellent. Most of her easting was run down between 50 and 56 degrees, the best day being 365 nautical miles, an average of 15.55 knots, the log frequently showing better than 16, with strong, steady breezes. There were several days in which over 300 miles were made, though one entry in the log book reads: "The expected westerly winds have sadly disappointed us, this being the fourth day the wind has been to the east." As an instance of how sail was carried, the following is taken from the account of a passenger: "In the dog watch, 4 to 6 p. m., when the chief officer came on deck to relieve the second officer, he swiftly cast his eye towards the horizon in the direction of the wind, then at the struggling canvas and particularly at the main topgallant sail, which threatened to blow away. As nautical etiquette forbids the officer in charge to alter canvas when the captain is on deck, without his command or consent, the chief officer, after his hurried survey, said: 'Captain Mather, that main topgallant sail is laboring very hard.' 'It is drawing well—let it stand, Mr. Bartlett,' was the reply. At 6 o'clock, when the second officer in turn relieved the first, he also gave a rapid glance about, and said, 'Captain Mather, that main topgallant sail is struggling hard.' 'It holds a good full—let it stand, Mr. McFarland,' was the reply. Even the old sea dogs among the crew begged the petty officers to send them up to take in sail while it was held safe to do so. As the helmsman turned his wheel, every turn of the spoke would make the ship jump in the water like a frightened bird. Men were stationed at every belaying pin, holding halyards and clew lines by a single turn 'under and over,' ready to let go and clew up at a signal."

From Melbourne the Nightingale proceeded in ballast to Whampoa; there loaded merchandise, mostly raw sugar, and with a number of Chinese as passengers proceeded up the coast to Shanghai, whence she took a cargo of tea to London. The passage occupied 91 days; she was but 70 days from Batavia roads. Continuing in that triangular run for several years, she averaged very good passages, and one of 88 days from Shanghai to New York in 1856 was excellent. In 1859 she made her first visit to San Francisco, having had the long passage of 148 days from Boston, with unfavorable weather conditions throughout. She crossed to China, and loaded at Foochow for New York, where on arrival in January, 1860, she was libeled on account of the financial embarrassment of her owners, Nye Brothers & Company, Canton. She was sold to a firm in Salem, which sent her to Rio, where she was again sold, becoming a slaver.

### Capture of the Slave Ship

The following particulars are from the correspondence of an officer on the Saratoga: "The Nightingale was known to have come out as a slaver, yet had all her papers so arranged that no commander would assume responsibility of seizing her without slaves being actually on board. Although the Saratoga was in sight when the Nightingale went into Kabenda on April 19, 1861, yet Captain Bowen coolly proceeded to make his arrangements to take his slaves aboard. He had been in the Congo since January 21, having cleared regularly from Liverpool and pretended to his crew that he was bound for Bombay. About March 29 he had been prevented from loading near the mouth of the river by being boarded by the Saratoga just at the hour that he had them all ready. He was just ready to load when the Saratoga hove in sight, and though it was a very dark and cloudy night, yet Saratoga kept the Nightingale in sight through the constant flashes of lightning, and bore down and boarded her. Bowen then gave out that he was going to Benguela and had his slaves carried to Kabenda and there for three weeks he lay off the coast under topsails and communicated with the shore by a little piratical looking Frenchman, too insignificant to attract any notice. If in the meantime his vessel was boarded, Bowen sent most of his crew to their hammocks to play sick. Having at last learned that all our (United States) ships had gone down to Loando and that the Saratoga was bound there, and being short of provisions, Bowen ventured to run in, but again the Saratoga was on hand and boarded. Found men sick and vessel all right. The Saratoga stood to the south and the Nightingale ran into Kabenda Bay April 18. Next day Saratoga returned, boarded and still found everything all right, but learned from shore that the slaver was ready to load. Saratoga weighed anchor next day and bore away to the south, apparently for Loando and Congo. As soon as it was dark Captain Taylor of the Saratoga tacked and ran down to Kabenda Bay, but on approaching it he took in all sail but jib and spanker and thus ran within three miles of the Nightingale and anchored. About 10:30 p. m. he sent two boats with muffled oars under Lieutenants Gulhue and Haegs so softly that the first intimation of their presence was about one o'clock, when they boarded the Nightingale. Bowen was in the cabin smoking with friends from shore. He said, 'Gentlemen, I have played a bold game and lost, as you have played better.' He said that he was to take on 600 more slaves, but this is thought mere bluff, as the capstan was muffled and the Nightingale would apparently have been away within an hour, with such a start as to defy pursuit. There were 966 slaves aboard. They had been kept in barracoons so long that they were in the last degree of emaciation and wretchedness, many diseased and deaths were averaging three a day. Early in the morning of the capture, Captain Taylor got both ships under way and sailed out of the bay some distance down the coast and anchored out of danger, preparatory to sailing for Monrovia."

### Captain Bowen, Owner and Slaver

It may not be uninteresting to hear what a friend of Captain Bowen wrote about his remarkable career. The captain and his mate escaped from the Nightingale the second night after the capture, in a boat that had been let down to supply additional men. As the captain told the story, the ship was boarded by an officer who was a Southerner and a slave-owner, and who allowed him to escape through a stern-port down a rope into a boat that took him ashore. By the end of 1861, he had made his way to Boston in the disguise of a sailor, but a reward being out for his capture, he contrived to escape to Havana, where he had accounts to settle for "goods" previously delivered. There he remained until the excitement was over. In 1872 he commanded the American side-wheel steamer Virginius, which was suspected of being a Cuban filibuster. At that time he was described as quite small, pale, quiet, beardless, grayhaired and well dressed; could speak French, Spanish and Portuguese; was well read and had been in every nook and corner of the globe. He could be kind and cruel, generous and selfish, logical and utterly irrational, good and bad, all in the

The Nightingale as a tea clipper. From a painting by W. Francis, Seattle same brief hour. With it all he possessed a keen and cutivated intelligence, was refined in his tastes, pleasant in address, blandly unconscious of depravity, cheerful in temper, fearless, cynical, witty if not wise, cool as the west wind and the last man on earth that a stranger would suspect of the crimes and misdemeanors he so freely confessed and appeared to regard with satisfaction. He was the son of a New York merchant, but was the family black sheep and, ignoring his advantages of position and education, ran away to sea. After the affair of the Virginius he returned to Colon and was for a time agent for the P. M. S. S. Company. He also had charge of the Howard House for Mrs. Susan H. Smith. He subsequently left the isthmus and his old friends lost sight of him. It was said that he had gone into permanent retirement and was writing sermons. His death was reported to have occurred about 1903.

### Service in the Navy

On being sent into New York as a prize, the clipper-slaver was sold at auction on July 2, 1861, for $13,000. She was immediately chartered by the Navy for use as a coal ship; on August 21 she arrived at Hampton Roads under command of Acting Master D. B. Horne, Jr., with orders to proceed immediately to Key West and report to Flag Officer Marvin, commander of the Gulf Blockading Squadron. In December she took a full load of naval stores from New York to Key West under command of Lieutenant Delano; she was then equipped with six guns. Shortly afterwards she was purchased outright by the Navy for use as an ordnance ship at Pensacola and was engaged in that service for about a year, when, being found too damp for such work, it was recommended in November, 1863, that she transfer her cargo to the U. S. bark J. C. Kuhn. In January, 1864, was ordered by Rear Admiral D. D. Farragut to replace the ship Sportsman in attendance on the Western Gulf Blockading Squadron off New Orleans. It was stated that she would require one or two streaks of copper and some repairs, as she was much wormed above her copper. Under date of May 17, 1864, Acting Volunteer Lieutenant E. D. Bruner, commanding the U. S. S. Nightingale, was ordered to proceed with the ship, when ready for sea, to Boston and to report to the commandant of the Navy Yard. The order further stated: "Your crew will be composed of men whose times have expired and who are sent north to be discharged. The ship is ordered north because she is supposed to be infected with the poison of yellow fever, which for the safety of the squadron requires her to be withdrawn from this (Pensacola) neighborhood." The ship arrived off the Boston Naval Station, June 9, 1864. She was sold February 11, 1865, by the Navy Department and again became a peaceful trader.

She arrived at San Francisco March 9, 1866, 119 days from Boston, with a cargo of merchandise consigned to Stevens, Baker & Company. Her freight list was $21,107. Being offered for sale, she was purchased at the price of $23,381 by the Western Union Telegraph Company. That firm had commenced the exploration of a proposed overland telegraph, which by means of a cable via Behring Straits was to unite the old and new world. There was at the time these explorations commenced no faith among telegraphic engineers in the success of the great Atlantic cable. The Western Union's project of itself was not entirely new, having been virtually started by P. D. Collins, an enterprising American who had after several years' perseverance obtained the necessary charters and right of way from the British and Russian governments. After several hundred explorers had examined 6000 miles of country on both sides of the Pacific, from Fraser River to Behring Straits and thence southward to the Amur, at an expense of more than $3,000,000, the scheme was abandoned in 1867 owing to the success of the Atlantic cable and not from any overwhelming difficulties in the way of the undertaking itself. Portions of the line that were completed between New Westminster and the mouth of the Quesnelle became a commercial proposition.

Captain Scammon, formerly of the U. S. Revenue Service, was the company's chief of marine, and when the Nightingale was purchased he took command of her as the flagship of a fleet that included the barks Clara Bell, Golden Gate and three others, the ocean steamer Wright, besides one large and two small river steamers. The Nightingale made several passages between San Francisco and Petropaulovsky and Plover Bay, all being quite fast runs, the final trip down from Plover Bay in 1867 being made in the excellent time of 22 days. While in Norton Sound the previous September, drawing 16 feet of water, a strong northeast gale perceptibly reduced the depth of water so that she touched bottom and but for the soft mud must have suffered injury. As it was, every time she pitched, men were thrown off their feet and out of their berths.

In January, 1868, the Nightingale proceeded from San Francisco to Victoria, where she loaded company's stores, etc., and sailed for New York March 19. On May 30 she put into Valparaiso leaking; repaired at a cost of $6000; sailed July 6 and arrived at New York September 7 after a good passage.

The Nightingale continued in trade between New York, San Francisco and China until late in 1876, when she was sold and went under the Norwegian flag. The telegraph company in the meantime had sold her to Samuel G. Reed & Company, prominent Boston shipowners. Captain Sparrow had continued in her for a couple of years, being succeeded by Captain Cutter. A Captain Palmer is said to have been the owner for a year or so. On her passage from New York in 1869 she had the unique experience of being able to carry her three royals from off the Plate until well into the Pacific. She had a stormy voyage from Hongkong to San Francisco in the fall of the same year, losing her foretopmast and several yards, besides some sails, and having the mainmast sprung. She bore up for Yokohama, where she repaired; she had strong gales throughout and several days before reaching San Francisco was under bare poles in a hurricane, with the main deck flooded most of the time. The damage on the voyage amounted to $22,000; it was a case of general average. Bount out of New York in 1872, she sprung a leak forward off Staten Land and was forced to put back to Rio for repairs. Crossing the Pacific from China in 1874 she made the whole run without having to furl any of the light sails. In 1876 she was 25 days from the coast of Japan to an anchorage in Drakes Bay, where she was forced by stress of fogs and calms. On this voyage, besides a cargo of merchandise she had 249 Chinese passengers. This was her last appearance at San Francisco. Captain Palmer had brought her in, but Captain Norris took her around the Horn to New York, making the run in 126 days.

The name of the clipper was not changed when she went under the Norwegian flag, but after some years her rig was altered to that of a bark. She continued in the North Atlantic trade, during the last years of her career, being engaged in carrying lumber from Qubec to London. She always sustained the reputation of being a very fast sailer. She was abandoned on April 5, 1893, in latitude 43 north, longitude 47 west, all hands being picked up.

# THE MEANING OF "DOCK"

## Commissioner Moody of San Francisco Cites Authorities to Prove That a Dock "Is the Slip, Basin or Canal in Which a Ship Rests"

**An article on "'Ex Dock' in Delivery Contracts" by A. J. Wolfe, chief of the division of commercial laws of the bureau of foreign and domestic commerce, reprinted in Pacific Marine Review (September) from Commerce Reports, has drawn an interesting discussion from F. S. Moody, commissioner, state board of harbor commissioners, San Francisco. Mr. Moody's letter and citations of authorities on the meaning of the word "dock" are quite illuminating and valuable, not only as tending to clear up an obscure though important point but also as encouraging additional discussion. It should be said, however, that the words quoted by Mr. Moody in the second paragraph of his letter are not those of Mr. Wolfe but of a "well-informed admiralty-law firm" to which the division of commercial laws submitted a question as to the meaning of "ex dock, Boston." Mr. Moody's letter and citations are published herewith.**

Editor, Pacific Marine Review:

Being obliged recently to go into the meaning of the word "dock" I have read with more than passing interest the article in the September number of the Pacific Marine Review by Mr. A. J. Wolfe under the caption of "'Ex Dock' in Delivery Contracts."

On page 526 appears the following, "where the seller places the goods upon the dock," etc. It would appear to me that Mr. Wolfe has written his article under the impression that the meaning of the word "dock" is the same as the meaning of the word pier or wharf. At all events he is very apt to lead his readers to that conclusion.

I am taking the liberty of enclosing you the result of my recent research work in reference to the subject matter of this note. I think that you will agree with me that a dock, according to the authorities quoted, is the slip, basin or canal in which the ship rests, and that it would be a physical impossibility to place goods upon a dock for delivery. The case of the People v. Roberts, California Reports, Volume 92, page 665, is very illuminating on this subject as is the criticism of the use of the term given in Funk & Wagnalls' Standard Dictionary.

F. S. MOODY.

Worcester's Dictionary, P. 431-432:

DOCK, n. (Goth, dok, a deep or gulfy place. Thomson,—Gr. to receive. Johnson,—Dut. duyken; Ger. —ducken, to stoop, to sink. Richardson.)

1. A place for building, repairing, or laying up ships, or where ships are loaded or unloaded.

2. A space between two contiguous wharves. (U.S.)

A **naval dock** is a place provided with all sorts of naval stores, timber and the requisite materials for ship building.

A **graving** or **dry dock** is used for receiving ships for repair.

**Wet docks** or basins are used for keeping vessels afloat at a certain level, in order to load or unload them with ease.

A **sectional dock** or **floating dock** is a dock in which vessels are raised out of the water for repair, on a series of air tight boxes.

2. The place where criminals, or persons on trial, stand in court. (Ency. London.)

DOCKAGE, n. A charge for the use of a dock for ships; dock rent. (Traders Guide.)

Words and Phrases, Judicially Defined: Vol. 3, Page 215:

DOCK. See "Adjustable Dock", "Dry Dock", "Graving Dock".

Floating dock or building, see "Building".

A "dock" is a place for vessels, whether excavated from the land or surrounded by wharves. Bingham & Doane. (9 Ohio.) (9 Ham.), 165, 167.

"Dock" is defined by philologists, according to the American use of the term, to be the space between two wharves. City of Boston v. Lecrow, 58 U. S. (17 How.) 426, 434, 15 L. Ed. 118.

DOCKAGE.

"Dockage is the pecuniary compensation for the use of a dock while the vessel is undergoing repairs. It is in the nature of rent, and the owner of a dry dock has the right to demand from those who seek its use whatever he considers a fair compensation, uncontrolled by the custom or other docks in other places." Ives v. The Buckeye State (U. S.), 13 Fed. Cds. 184, 185.

In Pol. Code, Section 24, the term "dockage" is used to designate the charge against the vessels for the privilege of mooring to the wharves or in the slips. Such charge is not contrary to an act charging wharfage which is a charge against merchandise for the use of wharves. People v. Roberts, 28 Pac. 689, 691, 92 Cal. 659.

DOCK BERTH.

It cannot be said as a matter of law that "having a dock berth" means anything other than having a place for loading and unloading at a dock. Decker v. Jacques (N. Y.), 1 E. D. Smith 80, 84.

DOCK PRIVILEGE.

A contract by a wharfinger to furnish dock privileges for the unloading of a cargo of iron from barges, and for reloading and removing the cargo by trucks from the wharf, includes the wharfage charges for giving the vessel a berth alongside the wharf, as well as the charges for space on the dock occupied by the cargo, and controls any custom to the contrary. The Brooklyn (U. S.), 46 Fed. 132, 133.

Marine Dictionary, Page 613, Col. 1:

DRY DOCK: GRAVING DOCK.

Terms applied to an excaved place near a wet dock or a river, in which vessels are placed for examination, cleaning, caulking, remanteling, repairing, painting, etc.

FLOATING DOCK: PONTOON.

A buoyant structure of wood, iron or steel employed for the same purpose as a dry dock.

EXPORT DOCK.

A "wet dock" principally used by vessels loading goods destined for a foreign port.

IMPORT DOCK.

A "wet dock" used by vessels (principally) for the discharge of cargoes brought from foreign port.

JUNCTION DOCK.

A long and narrow "wet dock" affording communication between two large docks.

BOTTOM OF A DOCK.

DOCK ENTRANCE.

DOCKERS.

Persons employed in loading and discharging vessels or in dock warehouse work.

DOCKAGE.

The act of bringing a vessel from a river, etc., into a wet dock or placing her in dry dock.

Page 612, Col. 1:

DOCK AND WET DOCK.

An excavation of great area, near some part of a navigable river, to float vessels entering for the purpose of loading and discharging.

Oxford Dictionary:

DOCK (dok). Docke, Docce, Dokke, Dok, Dock.

This word is first found in English in 1513; its origin is uncertain; it is found in Dutch, Swedish, Icelandic, Germany and other countries.

1. The bed (in the sand or ooze) in which a ship lies dry at low water; the hollow made by a vessel lying in the sand.
2. A creek or haven in which ships may lie on the ooze or ride at anchor according to the tide.
3. A trench, canal, or artificial inlet, to admit a boat.
4. An artificial basin excavated, built round with masonry, and fitted with flood gates, into which ships are received for purposes of loading and unloading or for repairs.
5. A range of dock basins, together with the adjoining wharves, warehouses and offices. The whole establishment of similar basins and adjoining work shops, etc., concerned with the building, outfit and repair of ships; a dockyard. (Naval docks.)
6. An enclosure in a platform into which a single line of rails runs and terminates.
7. Combinations — Dock — boat, constable, head, house, laborer, man, side, all, sill, space, trade, warehouse, etc. Dock-charges, dues, master, port, rent, silver, walloper, warrant.
8. To bring or put (a ship) into station or anchorage in a roadstead, etc.
9. To bring or put (a vessel) ashore where it may rest in the ooze, or in some trench or creek.
10. To take, bring, or receive (a ship) into a dock (in the modern sense).
11. To furnish or lay out with docks.
12. To come into dock, hence docking.

DOCKAGE.

a. charges made for the use of docks.
b. docks collectively; dock accommodation.
c. The berthing of vessels in docks.
d. The action of docking; deduction.

California Reports, Volume 92, Page 665:

People vs. Roberts.

Paterson, J., and McFarland, J., concurring—we concur.

When this case was first argued, our attention was not called to the distinction between wharfage and dockage. The case was argued, considered, and decided upon the assumption that the action was for the recovery of wharfage. An inspection of the various provisions of the statute bearing upon the subject shows that the legislature has preserved the etymological distinction between the two terms.

Funk & Wagnalls' Standard Dictionary, Page 729:

DOCK, $^2$n.

1. An artificial basin for vessels. "No port in the world can show a line of **docks** like those of Liverpool." McCarthy—"Our Own Times", Vol. 1, P. 72.
2. The space between two adjoining piers or wharves, often roofed over and used as a place for temporary storage; sometimes, less accurately, extended to the piers themselves, hence a wharf; as "We walked down on the **dock.**" Dock is by many persons used to mean a wharf or pier; thus: "He fell off the **dock** and was drowned." A man might fall into a dock, but to say that he fell off a dock is no better than to say he fell off a hole.

# U. S. S. CALIFORNIA FIRST IN ENGINEERING

CHIEF honor for excellence in engineering for the year 1921-22 has been awarded by Acting Secretary of the Navy Roosevelt to the U. S. S. California, third of the United States Navy's electric ships. Second honors were awarded the U. S. S. New Mexico, the first electrically propelled battleship. The equipment on this vessel is several years old.

Eighteen battleships were considered in making the awards. So that all ships might start the year on as near an equal standing as possible, handicaps were allowed the vessels of older type and with other kind of propelling apparatus.

In recognition of these high honors, the California will have a white "E" painted on her after funnel and the New Mexico will have a red "E" on her after funnel. The New Mexico has carried the white "E" for the past year, having won honors for the year 1920-1921. She now passes this honor to the California, which was commissioned and entered in the competition about one year ago. Both ships were electrically equipped by the General Electric Company.

Each of the enlisted men of the engineering force on the California will be awarded a prize of $10, and a letter of commendation, signed by the secretary of the navy, will be sent Rear Admiral Henry J. Zeigemeier. Admiral E. W. Eberle, commander-in-chief of the Pacific fleet, in an address to the officers and men of the California, said:

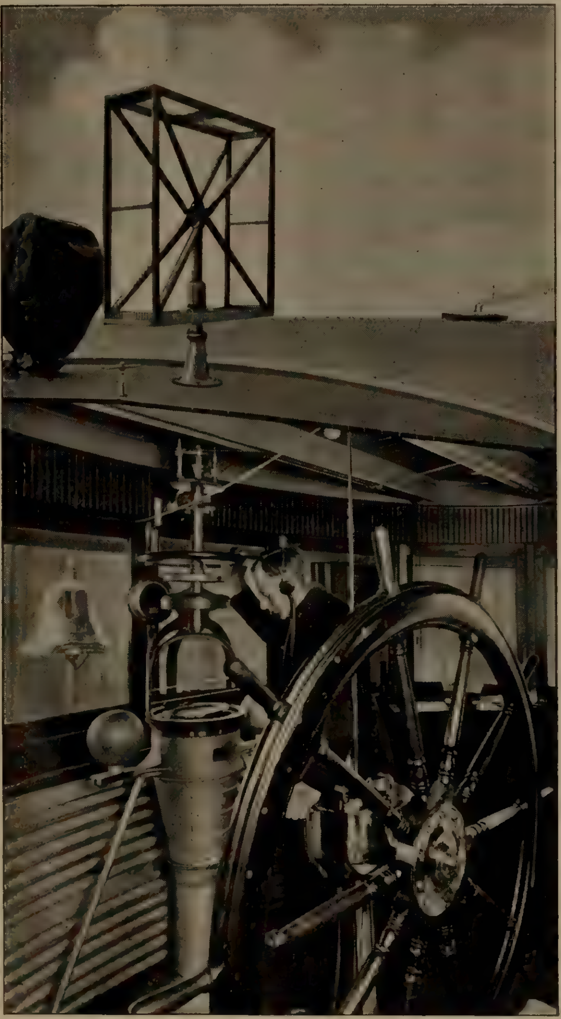
"Winning the battle efficiency pennant is a momentous event in the life of a ship; it is the greatest honor and distinction that a ship may achieve in time of peace, because thereby the ship has proved her fitness and has shown what could be expected of her on the day of battle. Above all it represents genuine cooperation, complete understanding, scientific management and perfect team work, on the bridge, in the conning tower, in the plotting room, in control and spotting stations, in turrets and handling rooms, in torpedo defense and anti-aircraft batteries, in fire-rooms, in engine rooms, in all auxiliary stations. This battle efficiency pennant represents all these activities coordinated and molded into one great living, pulsating, striking force under one intelligent command. Most warmly do I congratulate the captain, officers and men of the California on these well-earned honors."

# THE CONQUEST OF THE FOG

## Kolster Position Apparatus Praised by Shipowners as Greatest Contribution to Safety at Sea That Has Ever Been Invented

IN the May issue of Pacific Marine Review we abstracted a publication of the United States Bureau of Standards giving an outline description of their recently developed Kolster radio compass. This compass has since been very successfully demonstrated on the United States lighthouse tender Sequoia outside the Golden Gate. At this demonstration a committee of the American Shipmasters' Association tried the device with all the tests that their long navigating experience could suggest. So pleased was this committee with the result that it declared in written statement: "the Kolster radio compass and position finder the greatest contribution to safety of life and property at sea that has ever been invented as an instrument for use in navigation. In its simplicity of operation and its correct results lay its reliance and usefulness."

This device, as will be seen in the illustration, consists of a rectangular coil connected to a radio receiving set, a pivot support for this coil and means of adjusting its angular position. This coil and its support are mounted usually on the flying bridge in the fore and aft center line of the ship and directly over the indicator, which in the case of the Sequoia is mounted directly on the standard magnetic compass and binnacle. This is the usual method of installation.



### Automatic Beacons Needed

The Kolster system contemplates the installation by the Federal government of one or more automatic radio beacons on each lightship and lighthouse along the coast. The locations of these stations are clearly and exactly shown on all charts, and from these stations the automatic radio sets will send out at regular intervals characteristic radio signals similar to the present light flashes. Several lighthouses and lightships have been already equipped, and more beacons will be established as rapidly as possible. A navigator approaching any such radio beacon can operate his radio compass and ascertain his position as often as he desires without interfering with or interference from any other vessel and without the knowledge of any second party either on his own vessel or ashore, and this as easily and as quickly and with the same degree of accuracy as he could take a pelorus sight in clear weather.

The cost of installation on ship and in light stations is so nominal in comparison with the benefits derived that it is safe to predict that the cost will be met by insurance savings. A great feature of the system is that, the radio beacons being automatic, no additional personnel is required for their operation, what little attention they require being easily furnished by the regular lighthouse keepers.

An automatic compensator has been designed for the Kolster radio compass that automatically absorbs the quadrantal correction and makes the instrument direct reading.

### Silent Position Is Sharp

In operating the device the navigating officer with the head receivers clamped at his ears closes a switch and by a few simple adjustments places the radio receiving apparatus in operation on the standard wave length of the radio beacon stations. He then rotates the coil slowly by the hand wheel, listening to the variation in volume of the signals received. When the plane of the coil is at right angles to the line of direction from the transmitting station, the signals are silent. This silent position is critical and sharp, so that the directional line is indicated with great accuracy, and cross-bearings taken thus on two or more light stations, or successive bearings on a single light station with distances logged between bearings, will by very simple triangulation give position as accurately as can be obtained by sight bearings on visible fixed objects. It is therefore evident that fog has been conquered, since fog has no influence on the transmission of the electrical impulses used in wireless telegraphy.

Undoubtedly in the near future international action will formulate rules for the establishment of radio beacon stations on all the important danger points, and the ships of the world will have passed another milestone in their progress toward safety, for it is a matter of fact that a very large proportion of the most disastrous wrecks are directly or indirectly due to fog.

Following a recent grounding, the steamship H. F. Alexander of the Pacific Steamship Company's coastwise service has been fitted with a Kolster position finder. F. A. Kolster, inventor of the apparatus, was a passenger on the Alexander on her first voyage after the installation of the equipment. Several successful tests were made. The Alexander's installation probably is the forerunner of several on Pacific coastwise passenger vessels. The finder is manufactured by the Federal Telegraph Company.

# THE ECONOMIC OPERATION OF BOILERS AND BURNING OF FUELS

## An Analysis Of Heat Transfer Problems And Of The Combustion Factors Governing Furnace, Tube And Stack Design

By **FRANK G. PARKER, M.E.***

THE progress of development in fuel combustion is somewhat difficult to follow from year to year, because the year is too short an interval. The development of the steam boiler has moved with leaps and bounds, but the proper methods of burning fuels has not kept pace with that of development, although during the last ten years, especially in the burning of solid fuels, much more rapid progress has been made. Liquid fuel has never been given the study and thought that have been given to the burning of coal.

The rapid substitution of scientific methods in the burning of fuels is due primarily to the economic conditions that exist in the manufacturing world today. The marked success attained in large stationary plants has no doubt stimulated this development. The large measure of commercial success attainable is well substantiated by the large number of plants employing engineers who do nothing else but check the performances of the steaming units. Besides the high efficiencies obtained there are other advantages which aid in the introduction of the proper methods in burning fuels. The correct distribution of the heat under the unit eliminates impingement on the heating surfaces, excessive soot deposits, secondary combustion in the gas passages at high overloads, distributes the heat over the entire furnace and insures prolonged life of the boiler.

The most important factor governing the design and construction of the prime movers is reliability of service. Where thermodynamic efficiency and the overall dimensions are of extreme importance, the ultimate standards by which the success of any prime mover is measured is its degree of reliability of operation; for, no matter how large its efficiency may be, the unit is unsuitable if it cannot be relied upon to give continuous service.

While the degree of reliability of prime movers has been steadily increasing and is at present very high, the increase has not been due entirely to any one of few particular accomplishments. It has been brought about chiefly by these important factors:

1. By adhering rigidly to the use only of known safe and reliable materials and known safe stresses.
2. By a great number of minor detail improvements and simplifications, many of which were made purely to better enable attendants to understand the function of the various parts and to facilitate keeping them in proper normal condition.
3. By education and special training in the various classes of work of the entire human element entering into the manufacture and operation of the apparatus.

A very large percentage of accidents experienced in former years were due directly to what are well known now as obvious errors. These errors and oversights have been made (a) by the men engaged on design; (b) by the men engaged in the manufacture and assembly of the apparatus; (c) by the erecting engineers who are responsible for the proper installation of the apparatus, starting it in proper operation and instructing the attendants as to the proper handling and maintenance; (d) the operating engineers and attendants who are responsible for proper operation and maintenance in proper operating condition. The percentage of these errors has been least with those in close touch with the designer and greatest with those farthest away from him.

If steam is to be generated with a minimum expenditure of fuel, every point that influences the latter's economic use must be carefully investigated and made right, if not already so.

### The Furnace

Proper proportions and design for furnaces are essential to economic operation and to high boiler efficiency. In marine practice the furnace must necessarily be kept down to the minimum size that can be employed in order to save space. The best commercial results are secured by so proportioning the furnace that good efficiency will be secured at the ordinary loads carried, or at cruising speeds, with the burners arranged so that in an emergency the boilers may be run at a considerably higher rating. The problem is to determine the furnace volume available, length of flame travel, type of burner and type of boiler. To consume the combustible gases in the furnace chamber there should be a proper length of flame travel before the gases strike the tubes and a sufficient furnace volume.

There must be also a mingling action within the furnace to cause any unconsumed gases to reach the excess air. It is possible for a lane of gases to pass entirely through the boiler to the uptake in some forms of furnaces. To secure an efficient furnace it should be designed to prevent this laning action. In the burning of liquid and powdered fuels a laning action, on an irregular mingling of the fuel and air, may lead to pulsations within the setting that may become so severe as to limit the capacity at which the boiler may be operated. The velocity at which the air is admitted is an important factor, less trouble being experienced with forced draft than under natural draft conditions.

The effect of the absorption of radiant heat on the boiler tubes should be considered in furnace design and in the arrangement of the baffling. With the high carbon fuels it is necessary to absorb a considerable amount of the radiant heat in order to prevent the collapse of the brick work or an undue amount of deterioration. Few realize how great a proportion of the heat may be absorbed by the boiler as radiant heat. Irrespective of how well the boiler plant may be designed, it will not give the best results unless it is properly operated. The efficiency of the boiler plant depends upon the men in the fire room; not on those in the engine room. Aboard ship very few changes take place in the engine room after the vessel is under way, but changes are constantly taking place in the furnaces.

With the burning of coal, air is sometimes admitted over the fuel bed to obtain thorough combustion. This practice is never resorted to in the burning of liquid fuels.

The practice of burning liquid and solid fuels in the same furnace has never proved satisfactory, especially in the Scotch marine type of boiler. The products of combustion in the furnace must be kept at a temperature sufficiently high to permit complete combustion economically and without smoke.

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* Paper read before the American Society of Marine Engineers at San Francisco, August 10, 1922.

A high furnace temperature generally means rapid combustion and good furnace efficiency; rapidity of combustion in the marine type boiler is of vital importance. This brings us to a consideration of the types of burner adaptable for marine practice, disregarding efficiency claims of the manufacturers of these devices.

### Steam Atomizing and Mechanical Atomizing Burners

The higher capacities available are not so important as the rapidity of combustion obtained with the mechanical type of burner. Under the present methods of marine boiler design this factor governs the efficiency of the furnace to a large degree. The steam atomized burner does not utilize the full furnace volume; in fact, provision being made for checker work under the flame and the shape of the flame, only about one-half of the entire volume available is used. To secure good combustion with the steam atomizing burner, the flame should have a natural path of travel, the furnace being free from obstructions of any kind, and be of such length as to consume completely the gases before they come in contact with the heating surfaces of the boiler. The characteristics of the flame from this type of burner call for a much longer furnace to consume a given quantity of gas than with the mechanical atomizing burner.

The mechanical type of burner produces two effects that make it more desirable for marine practice than the steam atomizing burner: first, the quickness of combustion due to better atomizing at the burner, and thorough mingling of the oil and air at the burner; second, the form of the flame, which makes available a greater proportion of the furnace volume. This is essential, especially in the Scotch marine type of boiler.

### Heat Transfer

The only way to check the performance of furnace and boiler is to determine with proper instruments the transfer of heat taking place from the products of combustion to the water in the boiler.

This subject is treated very fully in technical paper No. 114, Bureau of Mines, which can be secured from the Superintendent of Documents, Washington, D. C., price 10 cents.

The condition of the boiler plate is a very important factor in heat transmission. The factors of soot and of scale formation largely govern the transmission of heat to the water.

Professor Osborne Reynolds formulated a law of heat transfer that may be expressed as follows:

$$R = a + b\frac{W}{A}$$

where R = b. t. u. transferred per square foot of heating surface per hour per degree difference between the temperature of gas and metal.

W = Weight of gas per hour

A = Area of gas passage

a and b are constants.

This law is based fundamentally on the rate of flow of the gas over the heating surface. It has been frequently and conclusively confirmed by Stanton, Nicolson, Jordan and others.

1. For a constant rate of mass-flow the rate of heat transfer is proportional to the temperature difference between gas and metal.
2. For a given temperature difference the rate of heat transfer increases with increased gas velocity according to a linear law.
3. For a given gas velocity and a given temperature difference the rate of heat transfer increases with the absolute value of the temperature.
4. The rate of heat transfer depends upon the condition of the heating surface.
5. The rate of heat transfer depends on the size of the channel through which the gas is flowing; the smaller the ratio of the area of the channel to the perimeter of the channel—that is, the smaller the hydraulic depth—the greater the ratio of heat transfer.

The value of a is influenced by the condition of the heating surface and varies between 1.75 and 2.25; but for a reasonably clean surface it is very close to 2.0.

The value of b is of the most importance. It is influenced by the hydraulic depth of the channel and by the temperature. All ordinary conditions are met by writing b=0.001. The effect of this at, say, 2000 and 4000 pounds of gas per square foot of gas passage per hour, is

$$2.0 + 0.001\left\{\frac{2000}{1}\right\} = 4 = R$$

$$2.0 + 0.001\left\{\frac{4000}{1}\right\} = 6 = R$$

Some take a higher value of b with a consequently higher value for R. Investigations carried on by the research department of the Heine Company advance the value of b as much as 0.004. To show the effects of this the above gas rates are taken, namely, 2000 and 4000 pounds.

$$2.0 + 0.004\left\{\frac{2000}{1}\right\} = 10 = R$$

$$2.0 + 0.004\left\{\frac{4000}{1}\right\} = 18 = R$$

The amount of heating surface required is, of course, inversely proportional to R when radiant heat is not considered, so that when W/A is, say, 4000 pounds, a boiler with R = 18 would have a heating surface only one-third of that of a boiler with R = 6, the capacity and efficiency being the same for both.

### Velocity, Expansion and Contraction of Gases

These factors are of vital importance in the economic operation of boilers and have been neglected to a large degree in the present methods of operation and the burning of fuels, the design of baffling, area of passes, uptakes, etc., rely on these factors alone, and in making changes to the above little consideration, if any, is ever given to these factors. In decreasing the area of passes the draft must be increased to pass a given volume of gas through the boiler, so in making changes to the baffling do not neglect the areas given by the boiler manufacturer. (The design of baffling is a debatable factor among the boiler manufacturers and will not be touched upon here.)

The stack temperature relies primarily on the velocity of the gases through the boiler. By decreasing the draft and slowing the velocity through the boiler a corresponding drop in the stack temperature may result, provided the condition of the heating plate is such as to allow a free passage of the heat to the water.

### Combination of Carbon and Oxygen

A few of the elements may combine chemically with each other in more than one proportion. This is true of carbon and oxygen. For instance, a quantity of carbon heated to incandescence and placed in a sufficient volume of oxygen will unite with it, each atom of carbon combining with two atoms of oxygen, forming a compound formerly known as carbonic acid but now universally termed carbon dioxide, the symbol of which is $CO_2$. The process is indicated by the formula $C+2O=CO_2$, and no matter how large the supply of oxygen may be it cannot be made to combine with a greater proportion of carbon. Therefore this gas, carbon dioxide, is evidently the product of complete combustion, there having been present a surplus of oxygen.

Carbon dioxide gas is transparent and colorless, its specific gravity 1.529 being about one and one-half times heavier than air. It has a slightly acid taste and smell and, being the product of complete combustion, is of course incombustible. It is, therefore, neither a supporter of animal life nor gas combustion, although it is not directly poisonous.

If, however, this carbon dioxide gas without the presence of sufficient oxygen is brought into contact with more carbon heated to incandescence, it will give up one-half of its oxygen, each atom of which being released at once unites with an atom of carbon from the second mass, forming a new compound known as carbon monoxide, the symbol of which is CO. The process is symbolically expressed as follows: $CO_2+C=2CO$, showing that not only is the new compound formed by the carbon with the release of oxygen, but that the carbon dioxide deprived of part of its oxygen is thereby also reduced to carbon monoxide.

Besides these more valuable constituents, fuels usually also contain small amounts of hydrogen, sulphur and nitrogen. The combustion of ordinary fuel is, therefore, a much more complex operation than the combustion of carbon alone, which has just been described.

### Combustion

This is the process of oxidation or the chemical union of an element with oxygen and takes place with such rapidity that considerable light and heat are produced. The principal combustion elements in fuel are carbon, hydrogen and sulphur. The oxygen necessary for the combustion of fuels is provided by the air entering the furnace, which being a mechanical mixture readily segregates from the other ingredients upon the application of heat. The amount of air admitted to the furnace is inversely responsible for the furnace temperature. The air fed to the furnace and the methods of distribution are very important factors, and the economic operation of the furnace relies primarily upon this factor.

### Combustion Losses

In the combustion of fuels certain losses accrue that vitally affect boiler efficiency. These losses are: Loss due to incomplete combustion; loss due to the latent heat of moisture formed in burning hydrogen; loss due to incomplete combustion of the volatile hydrocarbons; and other heat loss, such as methods of operation, loss due through heat carried away by the chimney gases, radiation, etc.

### Dangerous Half Truths in Boiler Room Records

The ease with which mistakes in boiler room records can be made is shown in the following test made on a 585 horsepower boiler of the watertube type, water being measured and coal weighed during an eight-hour test run, boiler equipped with an overfeed stoker, a $CO_2$ recorder, recording draft gauge, and a recording feed water thermometer.

### Sample of Coal

| | |
|---|---|
| Water as fed, pounds | 240,000 |
| Coal as fired, pounds | 24,160 |
| Average evaporation, pounds | 9.95 |
| Average $CO_2$, per cent | 10.6 |
| Feed water temperature, degrees | 144 |
| Steam pressure, pounds | 120 |
| Temperature of flue gas, degrees F. | 690 |
| Moisture, per cent | 2.70 |
| Volatile dry, per cent | 16.86 |
| Ash as fired, per cent | 10.91 |
| Fixed carbon, per cent | 69.98 |
| Sulphur, per cent | 2.77 |
| B. T. U. per pound | 13,383 |

Samples taken from the refuse during the eight-hour run were collected and tested for percentage of unburned carbon. It was 37.75 per cent.

### Heat Balance Based on Coal as Fired

| | B.T.U. | Per Ct. |
|---|---|---|
| Heat absorbed by the boiler | 10,710 | 77.60 |
| Loss stack | 2,720 | 20.30 |
| Loss unburned carbon | 960 | 7.18 |
| Loss hydrogen | 500 | 3.74 |
| Loss moisture | 36 | 0.27 |
| Total | 14,926 | 120.09 |

The check of the heat balance shows the claimed amount of heat obtained to be 20.09 per cent over the actual heat realizable from the coal, disregarding radiation, etc. This method of checking back is the only way of determining whether the boiler room records are correct.

### Furnace Brick Work

The furnace brick work will fail if saturated with heat at the full furnace temperature available with many classes of fuel; therefore some efficiency must be sacrificed in most cases in order to maintain the furnace brick work and keep the cost of repairs within a reasonable figure.

Most of the refractories available today must be kept below a temperature of 2400 degrees Fahrenheit. Where furnaces are operated under a suction that causes air to be drawn inward through the brick work, the cooling effect serves to prevent overheating, whereas if it is operated under a pressure there is a tendency for the hot gases to be forced outward, and overheating of the brick work is the result. Should it be possible to operate with a plus pressure within the furnace, a higher overall efficiency would result except where the temperature would interfere with combustion. For example, with some kinds of coal too high a temperature would fuse the ash and cause too much resistance to the air required for combustion, reducing the available capacity of the boiler.

Brick work will fail by plastic deformation before it reaches the melting point. The greater the load carried, the more apt is the wall to fail. Some provisions should be made in erecting the wall so that that portion of the wall that is subject to the most severe erosion action of the flame and gases can be replaced without removing the whole.

### Boiler Room Instruments

The haphazard methods employed in some stationary plants and on steamships are rapidly disappearing and scientific methods are replacing them. The most important factors are the temperature at stated points about the boiler and the percentage of $CO_2$ contained in the exit gases, a portable pyrometer being of advantage in the first case and a portable $CO_2$ instrument in the second. These instruments should be of rugged construction to stand abuse and still give some degree of precision.

### Standardization

Much of the inertia that standardization is compelled to overcome is due to the fear of over-standardization on the one hand and lack of comprehension of the many opportunities and accruing advantages on the other.

Mere knowledge is not power; but the ability to utilize scientific fact and to apply this capacity to the elimination of waste and the decrease of operating costs makes for efficiency. Every engineer knows the inconvenience and the expense of carrying in stock or securing parts for special equipment built along special lines. Most large stationary plants are equipped along uniform lines without any sacrifice of individuality or repression of inventive genius. On the contrary, by classifying various types of operation with corresponding grades of equipment the elements of construction entering into these items are largely common to all in certain recognized sizes of component parts. Thus the unfit become obsolete and uniform standards of performance are established. Many of the basic elements of standardization are closely allied to the safety movement in which co-operation rather than initial action is required. Like traffic regulations for the automobile, standardization has come to stay. With certain standards agreed upon, competition in design and inventive genius will still have free play, and increased efficiency and safety will result.

Old superstitions die hard, and while they linger some of them do harm. Such a superstition, for instance, is the idea still prevalent among engineers that each must maintain secrecy on the operating conditions on their vessel. This is a matter just now worth the attention of this organization because it is an obstacle to the development of that very program of promotion in which you have become interested. It is another public relations problem no less important than that which marks the contact of a utility with the local public.

Time was when each engineer operated to suit himself in his own way. His prime movers were individual and different. His methods and his procedure he guarded jealously. But in this era of standardization the days of the close mouth have passed. The era of publicity and frank sincerity is here.

Behind each method of operation lies a human story of vision, ingenuity, persistent skill and enterprise. The manner in which that operation was conceived, designed, perfected and then evolved through further gradual improvement is of interest to each engineer. For as long as engineers change jobs and talk the facts will be known. Only once in a thousand times is such a secret possible or necessary, for personal contact, confidence and understanding are still the greatest influences in the engineering world.

The manufacturing executives are as accessible to engineers wishing information on their equipment as they are to the man of industry. They encourage interviews regarding equipment put out by the firms they represent.

These problems should be discussed by this organization and the engineer encouraged to present his problems and make his achievements known, because after all they are not his alone but the concern of the entire engineering world.

# OCEAN MAIL CONTRACTS FOR THE UNITED KINGDOM

By H. B. ALLIN SMITH*

THE ocean mail contract system of the United Kingdom is in operation now practically as in 1913, although there have been several modifications to the advantage of the British government and contributory to the companies concerned.

### Between Southampton and New York

The contract with the Cunard Steamship Company for a mail service every Saturday from Southampton to New York, with supplemental services, now provides for a payment of £65,390 ($317,795 at nominal exchange, or $290,272 at current exchange of $4.44), a reduction compared with the payment of $330,922 in 1913. The Admiralty subvention, which in 1913 was £150,000, has been reduced to £90,000, partly in consequence of the loss of the Lusitania.

The construction of this steamship and of the Mauretania was the result of a special contract (expiring in 1927) by which the British government assured to the Cunard Steamship Company for twenty years a mail subsidy of £68,000 and an Admiralty subvention of £150,000, together with a government loan of £2,600,000 at 2¾ per cent to insure the construction of two steamships of higher speed than the trans-Atlantic liners of the North German Lloyd. The total contract payment to the Cunard Line for trans-Atlantic service from the United Kingdom to New York was thus £218,000 in 1913; at the present time it is £155,390, a reduction of £62,610.

### Contract With White Star

This reduction has been offset, however, by a contract with the White Star Line (Oceanic Steam Navigation Company) for a mail service every Wednesday from Southampton to New York, and for transportation of parcel post by all steamers of the line, in return for £72,000 annually. The present contract payments by the British government for the mail services between Southampton and New York are accordingly £137,390 ($667,715 at nominal exchange), an increase of about £10,000 over 1913. This expenditure covers subsidiary mail and parcel post service by other steamers of the two companies.

Under the pre-war Cunard contract the government secured two auxiliary cruisers, the Mauretania and Lusitania, built in 1907, each of 30,750 gross tons and 25 knots speed. Under the present arrangement the Cunard contract is performed by the Mauretania as before; by the Aquitania, launched in 1915, of 45,650 gross tons, 24 knots speed; and by the Berengaria (formerly the German Imperator), launched in 1912, of 52,022 gross tons, 23 knots speed. The new White Star contract is performed by the Olympic, built in 1911, of 45,360 gross tons, 24 knots speed; the Majestic (formerly the German Bismarck), launched in 1914, of 56,000 gross tons, 24 knots speed; and the Homeric (formerly the German Columbus), launched in 1913, of 35,000 gross tons, 18 knots speed.

### Competition in Trans-Atlantic Service

Of quite as much importance to the companies as the mail subsidy and Admiralty subvention is the elimination of German competition represented in the three German steamers noted above that were built for trans-Atlantic passenger trade.

The only trans-Atlantic mail steamers of 22 knots or over now in competition with the Cunard and White Star ships named are: the France, launched in 1912, of 23,666 gross tons, 24 knots speed; the Paris, launched in 1917, of 33,700 gross tons, 22 knots speed; and La Savoie, of 11,168 gross tons, or La Lorraine, of 11,372 gross tons, both launched in 1900 and of 21 knots speed. These perform the weekly mail contract service from Havre to New York under agreement between the Compagnie Generale Transatlantique and the French government. The French budget estimates for 1923 provide a subvention of 2,500,000 francs for this service, the same amount as during the current year. At the normal rate of exchange this would equal $482,500, but at the present rate (8.2) it actually equals only $205,000.

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* United States Assistant Trade Commissioner, London.

### Services to the Far East and Australia

The principal British ocean mail contract is with the Peninsular & Oriental Steamship Company for transportation of mail from Southampton weekly to Bombay and return for £160,000, fortnightly to Shanghai and return for £50,000, and once a month to Adelaide and return for £42,500—in all £252,500 ($1,227,150 at normal exchange), compared with $1,484,300 in 1913. This reduction is due to the fact that in 1913 the Australian mails were carried fortnightly, instead of monthly as at present by the Peninsular & Oriental steamships; the Australian line of government steamers is also beginning to carry the mails monthly, thus maintaining the pre-war regularity of service.

Even before the war, with the full measure of self-government assumed by British oversea dominions, they also assumed a share of the naval expenditures of the British Empire and of the cost of ocean mail transportation. The colonial mail contracts are not available at the present time, and they are complicated by the fact that, in consequence of the war, the Dominion of Canada, the Commonwealth of Australia, and British India all own and operate government fleets of merchant ships.

### Across Continent by Rail

The letter mails from the United Kingdom for India, China, and Australia are not dispatched at Southampton on the Peninsular & Oriental steamers, but are sent by rail to Dover and thence by special Indian mail packet to Calais. For this mail-packet service a subsidy of £10,000 is granted, increased for the present to £17,500. From Calais the mails are forwarded by French and Italian railroads to Brindisi, and thence by small, fast steamers to the Peninsular & Oriental ocean liners as they enter or leave the Suez Canal, thus gaining the time saved by the greater speed of express trains over express steamers.

For the same reason, among others, the Italian government has not provided mail subsidies to Italian lines to the United States, as quicker dispatch for Italian mails is secured by sending them by rail to Cherbourg, Havre, or Southampton, there to embark on the British or French trans-Atlantic liners.

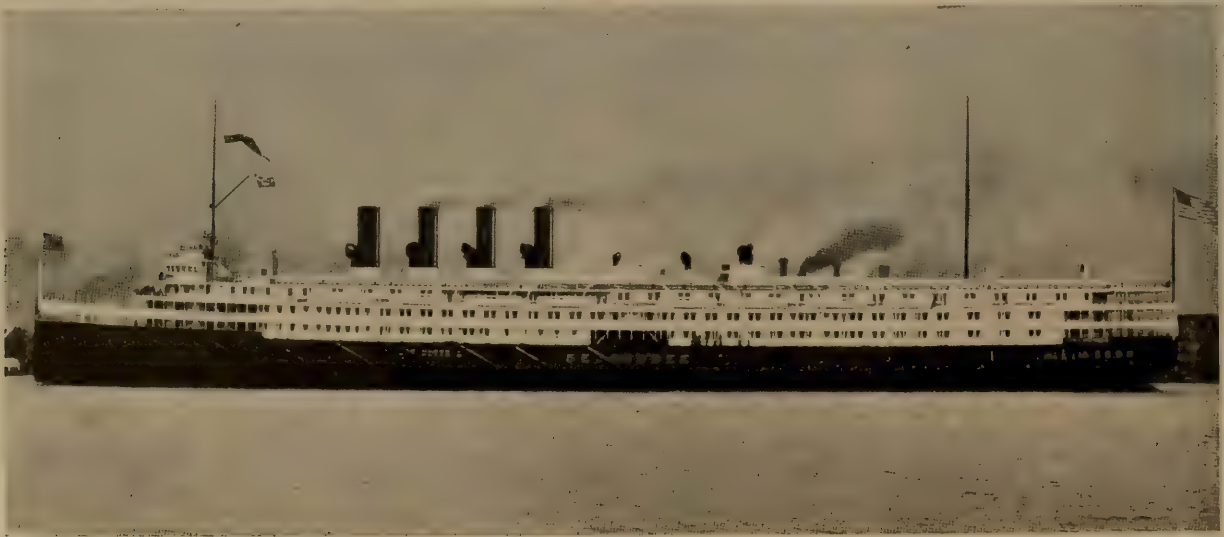
Incidentally it may be noted that the British government is considering projects for the transportation of mails by aerial navigation from the United Kingdom to Egypt, India and Australia; the French government already has air-mail services to several points in French Africa.

Mails from the United Kingdom for the Continent of Europe are dispatched daily by the Dover - Calais ferry of the Southeastern & Chatham Railway, the annual subsidy for this service being £30,000, as before the war. For the daily mail service from Harwich to the Hook of Holland the pre-war subsidy was £850, but this at present is under revision.

### To South and West Africa

The Union of South Africa is charged with the subsidy to the Union - Castle Line for transportation of mails between the Cape of Good Hope and England; the present arrangement, however, is not at hand. The British postoffice department appropriates £5070 to the ships of this line for stopping once in four weeks outward and inward bound at Ascension Island and St. Helena.

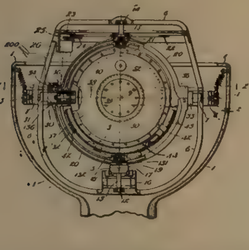
It also pays, according to the volume of mails, an approximate total of £15,355 to the African Steamship Company and to the British & African Steam Navigation Company for transporting the mails every Saturday from Liverpool to British possessions on the West Coast of Africa. These two arrangements are the same as before the war. So far as both British and French possessions in Africa are concerned, it is quite probable that in the near future letter mail will be transported under subvention contracts with aerial navigation companies.



The Lake passenger vessel Seeandbee, built by the American Ship Building Company for the Cleveland & Buffalo Transit Company

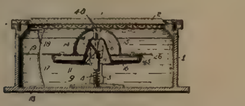
# SOME MARINE PATENTS OF THE MONTH

**1,425,056. GYROSCOPIC COMPASS.** George A. Rossiter, Brooklyn, N. Y., assignor to The Carrie Gyroscopic Corporation, New York, N. Y., a Corporation of New York. Filed Feb. 8, 1919. Serial No. 275,805. 3 Claims. (Cl. 33—204.)



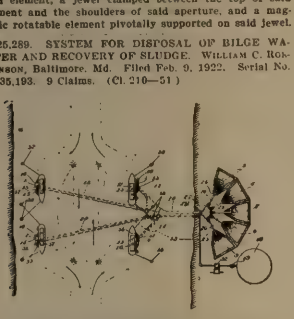
1. In a gyro compass the combination of a directive element; a supporting means for mounting said element for oscillation around a horioznta1 axis; means for mounting said supporting means for movement about a vertical axis; and a movable mass of mercury associated with said directive element, the center of gravity of which is maintained in its lowest position when either end of said horioznta1 axis is tipped, substantially as described.

**1,424,804. JEWEL SUPPORT FOR COMPASSES.** Edwin W. Day, Brooklyn, N. Y., assignor to The Sperry Gyroscope Company, Brooklyn, N. Y., a Corporation of New York. Filed July 23, 1917. Serial No. 182,126. 7 Claims. (Cl. 33—222.)



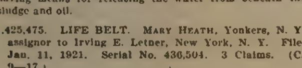
3. In a compass, the combination with a casing, of a spring supported by said casing, a supporting element on said spring, a member having a shouldered aperture on said element, a jewel clamped between the top of said element and the shoulders of said aperture, and a magnetic rotatable element pivotally supported on said jewel.

**1,425,289. SYSTEM FOR DISPOSAL OF BILGE WATER AND RECOVERY OF SLUDGE.** William C. Robinson, Baltimore, Md. Filed Feb. 9, 1922. Serial No. 535,193. 9 Claims. (Cl. 210—51.)



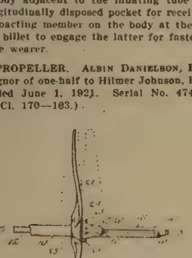
1. A system for the disposal of bilge water and the recovery of sludge and oil from bilge water consisting of a station accessible to navigable water so the ships to be discharged can come along side the same, a settling tank or basin, a pipe connecting the station to the settling tank, means for connecting the pipe to the liquid in the bilge of a boat and means for pumping the liquid from the bilge through the pipe to the settling tank, the settling tank having means for releasing the water from beneath the sludge and oil.

**1,425,475. LIFE BELT.** Mary Heath, Yonkers, N. Y., assignor to Irving E. Letner, New York, N. Y. Filed Jan. 11, 1921. Serial No. 436,504. 3 Claims. (Cl. 9—17.)



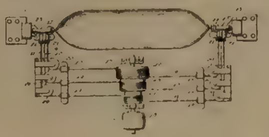
1. As a new article of manufacture, a belt of the class described including an inflatable body, an inflating tube on the body adjacent to an end thereof, the tube projecting beyond the end of said body, a billet at that end of the body adjacent to the inflating tube and presenting a longitudinally disposed pocket for receiving said tube, and a coacting member on the body at the opposite end from the billet to engage the latter for fastening the belt about the wearer.

**1,425,179. PROPELLER.** Albin Danielson, Brooklyn, N. Y., assignor of one-half to Hilmer Johnson, Brooklyn, N. Y. Filed June 1, 1921. Serial No. 474,137. 4 Claims. (Cl. 170—163.)



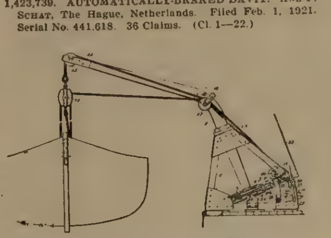
1. A propeller mechanism comprising a driving shaft, trunnions on said shaft, and blades arranged on opposite sides of said shaft and pivotally mounted on said trunnions.

**1,424,227. BOAT-LAUNCHING APPARATUS.** George Wright, San Francisco, Calif. Filed June 22, 1920. Serial No. 390,935. 4 Claims. (Cl. 9—22.)



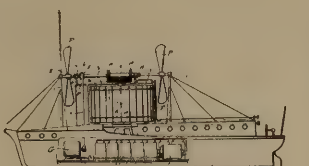
1. An apparatus as characterized comprising a plurality of boat handling davits; means disposed between said davits for supporting a group of boats in nested relation; a plurality of cables each attached to one of said boats; and a hoisting mechanism for operating said cables simultaneously at various fixed ratios to raise and lower said boats in groups.

**1,423,739. AUTOMATICALLY-BRAKED DAVIT.** Ane P. Schat, The Hague, Netherlands. Filed Feb. 1, 1921. Serial No. 441,618. 36 Claims. (Cl. 1—22.)



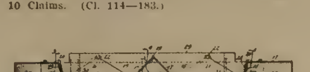
14. In a device of the character described, a davit adapted to swing outboard under the influence of its load; braking mechanism for the davit including a bellcrank lever for applying the brakes; a flexible member adapted at one end to support the load suspended from the davit, and operatively connected at its other end to said bellcrank lever, whereby to apply the brakes to the davit in proportion to the weight of the load; a loaded lever also connected with said bellcrank lever to additionally apply the brakes to the davit; and manually operated means for counteracting the influence of the load and of the loaded lever upon the braking mechanism.

**1,423,514. POWER PLANT.** William Paul Butusov, Norfolk, Va. Filed Jan. 24, 1921. Serial No. 439,467. 2 Claims. (Cl. 170—10.)



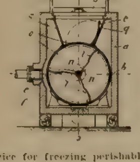
1. The combination with a movable body including a deck, an upstanding frame carried by the deck, the deck and frame having vertically opposed bearings, a wind driven element rotatably supported by said bearings, a shaft supported by the deck above the frame, a sleeve mounted upon the shaft for driven connection with the wind driven element, coacting means carried by the shaft and the sleeve for causing the shaft and sleeve to rotate in unison, said means including a member keyed to the shaft for rotation therewith and for movement lengthwise thereof, and means carried by the frame for imparting movement to the member lengthwise of the shaft.

**1,424,452. SELF-BAILING SCOW.** Harris T. Dunbar, Buffalo, N. Y. Filed May 14, 1921. Serial No. 469,431. 10 Claims. (Cl. 114—183.)



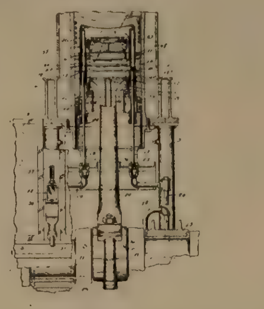
1. A scow comprising a hollow hull provided at one end with a trap which is elevated above the bottom of the hull while its other end is provided with a lower chamber extending down to the bottom of the hull, and a valved conduit leading from said lower chamber to said elevated trap.

**1,422,570. APPARATUS FOR COOLING AND FREEZING OF FISH AND THE LIKE.** William Bate Hardy and Jean Julien Pique, Westminster, London, England. Filed Oct. 12, 1920. Serial No. 416,508. 2 Claims. (Cl. 257—82.) (Granted under the provisions of the act of Mar. 3, 1921, 41 Stat. L., 1313.)



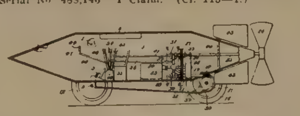
1. In a device for freezing perishable articles, a tank having a feed opening, an inner chamber, a gutter disposed within the tank for directing articles to the interior of the inner chamber, a cover for closing the feed opening, a chute for directing articles to the gutter, means for supplying and regulating a quantity of fluid to the inner chamber, and agitating means operating in the inner chamber.

**1,425,151. ENGINE-COOLING SYSTEM.** Huibert C. Verhey, St. Louis, Mo., assignor to Busch Sulzer Bros.-Diesel Engine Company, St. Louis, Mo., a Corporation of Missouri. Filed Feb. 10, 1917. Serial No. 147,781. 13 Claims. (Cl. 123—176.)



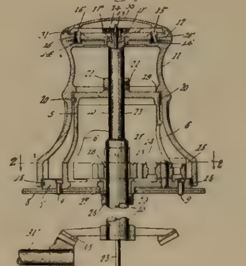
13. In an internal combustion engine, the combination with a piston containing a cooling chamber, means for circulating cooling fluid, a piston pin mounted in the piston and having within it a circuitous passage one end of which is in communication with the cooling fluid circulating means and the other with the piston cooling chamber, and means for compelling substantially all the cooling fluid for the piston to pass through the circuitous passage in the piston pin.

**1,420,783. COMBINED LAND AND WATER VEHICLE.** Anton Swencki, Racine, Wis. Filed July 28, 1921. Serial No. 488,146. 1 Claim. (Cl. 115—1.)



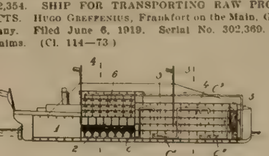
In a combined land and water vehicle, a hollow watertight body having a motor supported therein with a rearwardly extending power shaft, an upright bracket mounted within the body and having the rear end of said power shaft journaled therein and provided with a forwardly extending arm, a gear fixed upon the power shaft between the forward end of the arm and the bracket, a short shaft extending longitudinally of the body beneath the power shaft and journaled in said bracket, said shaft having a gear loosely mounted thereon in mesh with the first named gear and further having its rear end extended through the body, front and rear supporting wheels for said body, a driving axle carrying the rear supporting wheels and rotatably geared to the rear end of the second named shaft, a third shaft journaled in the bracket above the power shaft and extending axially of the body through the rear end of the latter, a propeller mounted upon the projecting rear end of the last named shaft, a third gear loosely mounted upon said last named shaft in mesh with the gear fixed upon the power shaft, and manually operable means within the body for clutching or unclutching the gears from the second and third named shafts.

**1,424,990. CAPSTAN.** Albert A. Coyle and William S. Mitchell, St. Louis, Mo. Filed Mar. 29, 1920. Serial No. 369,639. 3 Claims. (Cl. 254—150.)



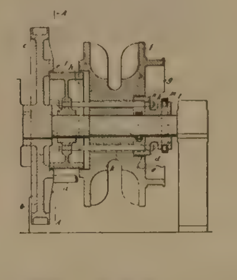
1. In a capstan, a base having a bed plate, roller bearings supported in the periphery of the bed plate and in the base, adjacent to the upper end thereof, a revolving drum having an internal flange resting on the upper end of the base, portions of the drum contacting with the roller bearings, an operating shaft extending through the drum, a pinion movable with the operating shaft, a pinion in mesh with the first mentioned pinion, a gear formed within the lower portion of the drum the teeth thereof contacting with the teeth of the second mentioned pinion to rotate the drum when the shaft is rotated, and means for disconnecting the shaft and first mentioned pinion.

**1,422,354. SHIP FOR TRANSPORTING RAW PRODUCTS.** Hugo Greffenius, Frankfort on the Main, Germany. Filed June 6, 1919. Serial No. 302,369. 3 Claims. (Cl. 114—73.)



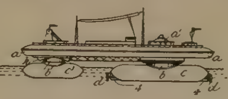
1. A ship adapted for the transportation of grain and the like having thereon facilities for storing the grain, a mill for grinding the grain during the transportation thereof, means for conveying the grain to the mill from the storage place, and means for storing the main and by-products resulting from the milling of the grain.

**1,424,501. CLUTCH FOR WINDLASSES.** Stewart McIntosh, Monkseaton, and John Spence Guild, Newcastle-upon-Tyne, England. Filed June 25, 1920. Serial No. 391,665. 3 Claims. (Cl. 192—67.)



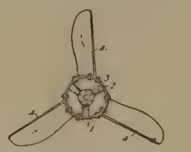
1. In a windlass, the combination with a shaft, a cable lifter thereon having a polygonal recess in one of its side faces, a main driving gear wheel on said shaft having a polygonal recess in its side face, and a polygonal clutch member interposed between said lifter and gear wheel loose on the said shaft and means for operating said clutch member to couple or uncouple said lifter and gear wheel thereby.

**1,422,742. MULTIPLE HULL BOAT.** Frederick George Creed, Croydon, England. Filed Dec. 3, 1919. Serial No. 342,226. 8 Claims. (Cl. 114—61.) (Granted under the provisions of the act of Mar. 3, 1921, 41 Stat. L., 1313.)



1. A ship embodying a superstructure and a plurality of float-structures each embodying a float, one of said floats being horizontally rotatable for steering purposes and having a hollow supporting member, means for rotating the float through the medium of said hollow supporting member, said rotatable float carrying trimming means consisting of a pair of vanes arranged at opposite sides of the float, a transverse shaft carrying said vanes, and means for rocking said shaft embodying a member extending up through the tubular member and rotatable with the float.

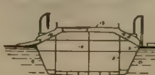
**1,424,672. PROPELLER.** George A. Ogrissek, Jersey City, N. J. Filed July 23, 1919. Serial No. 312,656. 4 claims. (Cl. 170—170.)



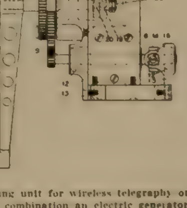
1. A propeller comprising a hub, an inner series of radiating flat blades substantially the same width throughout extending from said hub, a ring secured to the outer ends of said blades, and an outer series of flat blades extending radially from said ring, said last mentioned blades having straight forward edges and convexly curved rear edges, said curved edges approaching said straight edges toward the outer ends thereof.

**1,425,243. SHIP HULL CONSTRUCTION.** John Duthie, Sr., Seattle, Wash. Filed May 16, 1919. Serial No. 297,463. 2 Claims. (Cl. 114—56.)

1. In a ship's double hull with a double bottom, or tank, side bulkheads inboard of the side plating and extending from the deck straight through the tank top and to the bottom, and rigidly connected to the tank top and bottom, the side plating receding inwardly from the water line to the bilge where it is spaced from the lower end of the side bulkheads, and to the deck.

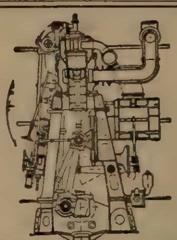


**1,424,294. SIGNALING UNIT FOR WIRELESS TELEGRAPHY.** Sydney George Frost, Twickenham, England. Filed May 11, 1922. Serial No. 560,007. 5 Claims. (Cl. 250—17.)



1. A signaling unit for wireless telegraphy or the like comprising in combination an electric generator, a rotor therein, means for rotating the rotor, connections for associating the rotor in a transmitting circuit and means mechanically controlled by said first means and operating in conjunction with the rotor in said connections for transmitting telegraphic signals.

## Oil Engines and Motorships



# A DIESEL TUGBOAT FOR THE COOS BAY LUMBER COMPANY

### Heavy Oil Engine Vessel To Replace Gasoline Towboat Now in Use; Machinery Contract Awarded to Enterprise Company

By **DAVID W. DICKIE**

THE new tugboat for the Coos Bay Lumber Company is to be fitted with a high pressure diesel engine and is to replace the gasoline tugboat now doing the work. The general outlines of the model are the same as the Pacific Coast heavy duty tug with the exception of changes in dimensions to take care of the increase in the machinery weights.

The pilot house is aft of the engine house with the entrance from the deck at the after end and the entrance to the engine room is from the pilot house. The boatswain's locker and chain locker are in the forecastle with the toilet in the after end equipped with Mott fittings. The entrance to the engine room being at the after end, the operator starts the engine, watching it until it is properly warmed up. He can then go into the pilot house and operate the vessel by means of the controls there.

The stem is of oak, sternpost of ironbark, and the remainder of the boat of P. S. pine, all timbers being in one piece where practicable, the bent frame construction being used.

Due to the fact that the boat does most of its work on a head line, the side line was made with considerable round to facilitate getting away from the wharf or barge quickly.

The boat was designed by David W. Dickie, and is being built by Nunes Brothers of Sacramento, California. The electrical work is being done by Ets-Hokin & Galvan, the plumbing by Cook & Company, and the fuel tanks are being furnished by the California Steel Products Company.

The general dimensions of the boat are as follows:

| | |
|---|---|
| Length over-all | 57′ 0″ |
| Length from the rabbet of the stem to the back of the sternpost at the shaft | 48′ 6″ |
| Length from the rabbet of the stem to the inside of the guard at the stern | 56′ 0″ |
| Length from the rabbet of the stem to the back of the rudderpost | 52′ 10″ |
| Displacement length | 50′ 0″ |
| Beam molded at the waterline | 15′ 6″ |
| Beam over plank at waterline | 15′ 10″ |
| Beam over guards | 17′ 0″ |
| Beam molded at the deck | 15′ 8″ |
| Beam over plank at the deck | 16′ 0″ |
| Crown of beam | 2″ in 16′ 0″ |
| Draft forward at the forefoot | 4′ 9½″ |
| Draft at the sternpost | 6′ 6½″ |
| Mean draft keel | 5′ 8″ |
| Freeboard at the lowest point of sheer | 2′ 5½″ |
| Sheer forward | 3′ 2″ |
| Sheer aft | 12″ |
| Depth of hold | 6′ 2″ |
| Depth from the top of the deck at the side to the rabbet line amidships | 7′ 10″ |

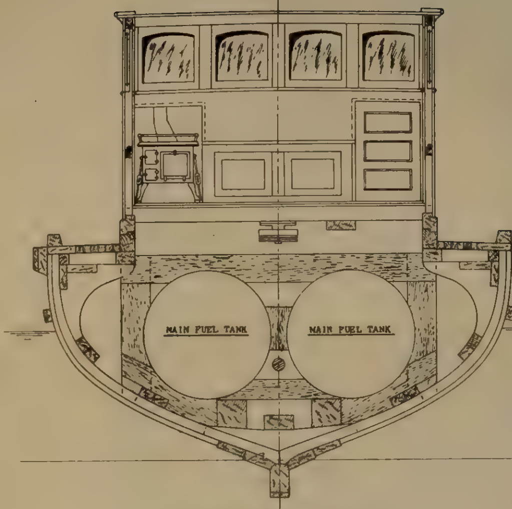
The length of 57 feet is determined by the distance between the wharves in San Francisco harbor. With a properly designed boat 57 feet over-all it is possible, where the boat is lying heading in to the sea wall, to swing her bow away from the wharf, put the helm hard over and make the complete turn and clear the wharf on the opposite side of the slip. It is necessary to "back and fill" with a 60-foot boat unless the maneuver is very carefully made.

To take care of the increase in weight of the diesel boat over the gas boat where draft is limited, it may be necessary to lengthen the boat to 58 feet.

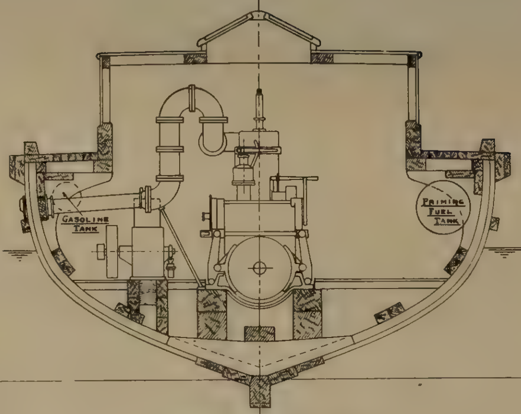
The heavy oil engine having supplanted the gas engine where economy is a factor, F. A. Warner, vice-president, and E. A. Fiske, purchasing agent, of the Coos Bay Lumber Company, called for bids on all types, figuring the fuel economy on the base of a twenty-hour round trip a day.

The contract for the machinery was awarded to the Enterprise Engine Company for the high pressure type of engine that operates by forcing the fuel by what is known as solid injection through the nozzles into the cylinders at 4000 pounds' pressure. Compression takes place up to 350 pounds, plus or minus, sufficient air being drawn in on the inlet stroke to supply oxygen for combustion. The expansion of the burning fuel delivers the power to the piston on the down stroke. The up stroke is the scavenging stroke and the next downward stroke draws fresh air (oxygen) into the cylinder for the next cycle, making a four-cycle engine. The fuel used is what is known commercially as diesel fuel oil of 24 degrees Baume; the characteristics being as follows:

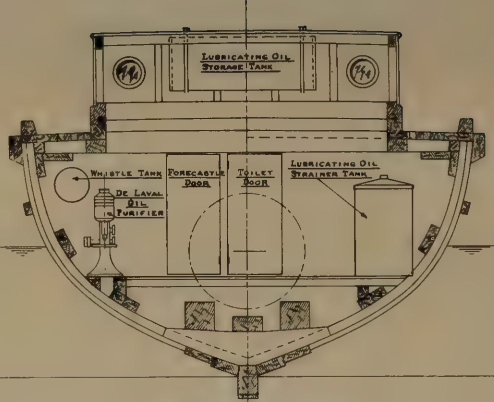
| | |
|---|---|
| Baume, degrees | 24 |
| Specific gravity | .9091 |
| Pounds a U. S. gallon | 7.571 |
| Ash (passes 200 mesh), per cent | .037 |
| Asphalt (residue steam distillation by weight), per cent | 3.41 |
| Sulphur, per cent | .45 |
| British thermal units a pound | 18,916 |
| British thermal units a gallon | 143,213 |



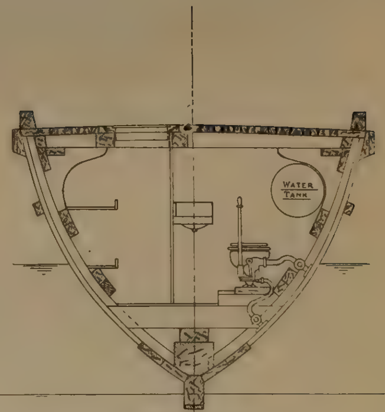
PILOT HOUSE AND GALLEY LOOKING FORWARD.



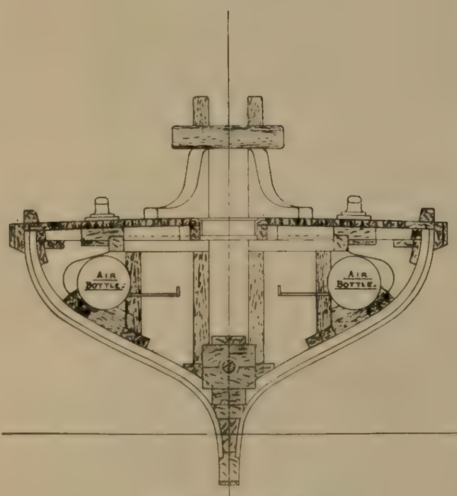
AFTER ENGINE ROOM LOOKING FORWARD.



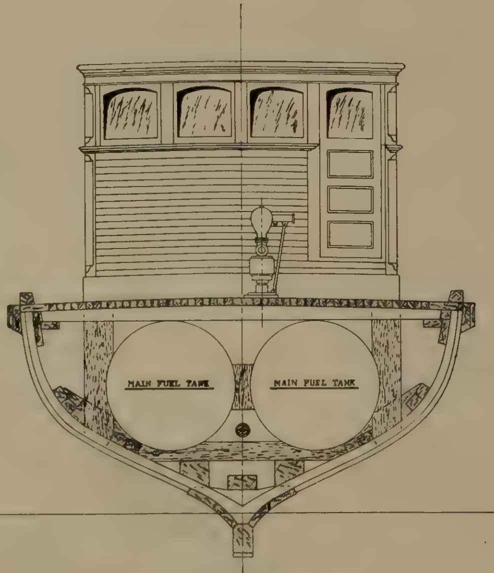
FORWARD ENGINE ROOM LOOKING FORWARD.



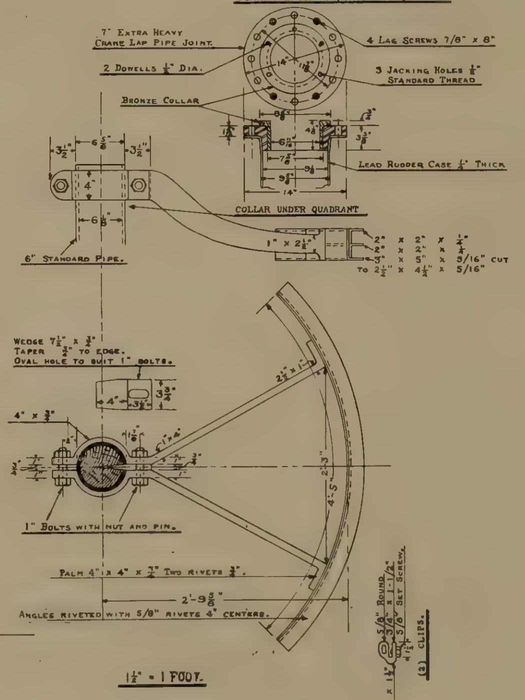
FORECASTLE AND TOILET.



AFTER HOLD LOOKING FORWARD.

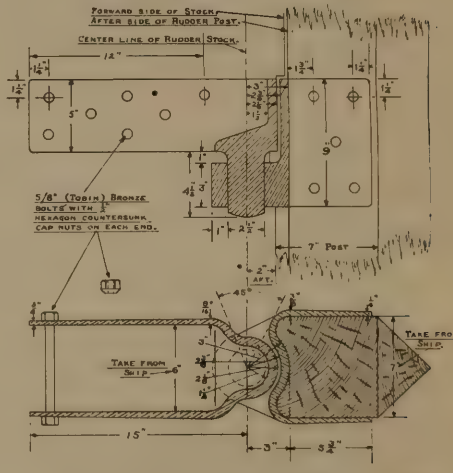


AFTER END PILOT HOUSE LOOKING FORWARD.


7" EXTRA HEAVY CRANE LAP PIPE JOINT.
2 DOWELLS ½" DIA.
4 LAG SCREWS 7/8" x 8"
3 JACKING HOLES ⅝" STANDARD THREAD
BRONZE COLLAR
LEAD RUDDER CASE ¼" THICK
14"
COLLAR UNDER QUADRANT
6" STANDARD PIPE.
2" x 2" x ¼"
2" x 2" x ¼"
3" x 5" x 5/16" CUT TO 2½" x 4½" x 5/16"
1" x 2½"
WEDGE 7½" x ½" TAPER ⅛" TO EDGE. OVAL HOLE TO SUIT 1" BOLTS.
4" x ½"
1" BOLTS WITH NUT AND PIN.
PALM 4" x 4" x ½" TWO RIVETS ⅞".
2'-9⅝"
4'-5"
ANGLES RIVETED WITH 5/8" RIVETS 4" CENTERS.
5/8" ROUND
3/4" x 1-1/2"
5/8" SET SCREW.
(3) CLIPS.

1½" = 1 FOOT.

FORGED STEEL QUADRANT 3/8" CHAIN


FORWARD SIDE OF STOCK.
AFTER SIDE OF RUDDER POST.
CENTER LINE OF RUDDER STOCK.
12"
5"
9"
7" POST
5/8" (TOBIN) BRONZE BOLTS WITH ½" HEXAGON COUNTERSUNK CAP NUTS ON EACH END.
2" AFT.
45°
TAKE FROM SHIP.
TAKE FROM SHIP.
15"
3"
3½"

BRONZE PINTLE 6" STOCK 3" = 1 FOOT

## 165 HORSEPOWER
## DIESEL TUGBOAT
FOR THE
## COOS BAY LUMBER CO.

DAVID W. DICKIE
ENGINEER & NAVAL ARCHITECT
112 MARKET ST. SAN FRANCISCO, CALIF.
SCALE ¼" = 1 FT. JUNE. 1922.

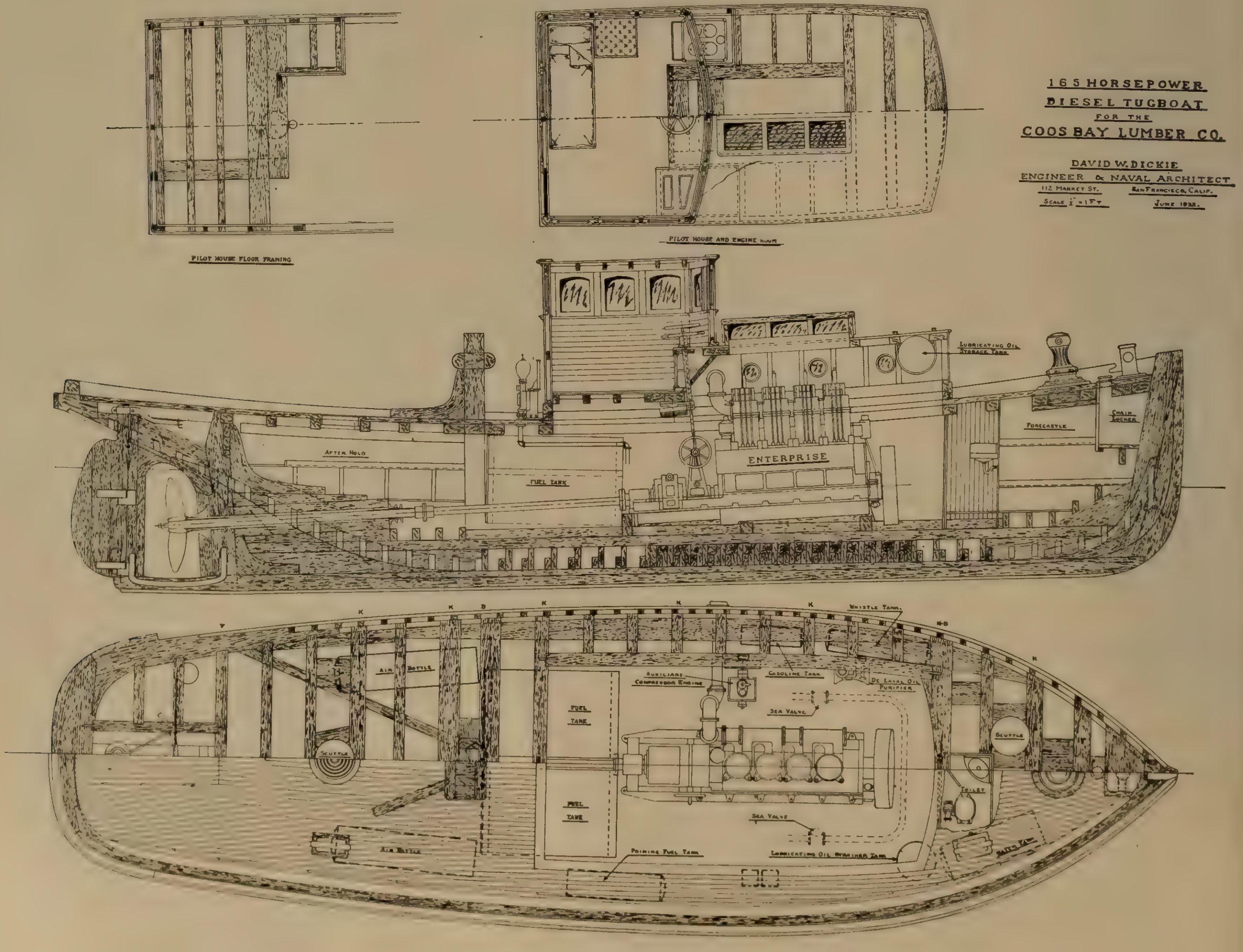
SAN FRANCISCO
PUBLIC LIBRA

The diesel fuel oil is used at 60 degrees Fahrenheit and has a viscosity of 122 seconds Saybolt meter.

In order to determine whether it would be possible to run the boat on ordinary steamer fuel, an experiment was performed by heating the steamer fuel to 140 degrees Fahrenheit, whereby the viscosity was reduced below that of 24 degrees Baume fuel oil so it would pass through the eight to twelve thousandths holes in the nozzles of the high pressure engine. The writer found from a careful trial that there is some other factor to be taken into account, as the heated fuel refuses to flow indefinitely at 140 degrees Fahrenheit. It seems to form a sticky gum in the nozzle which finally closes the small holes. Further experiments are contemplated.

The table gives the results of the complete calculations and shows the direction that any changes may take in the future:

| Items | No. 2 W.L. | No. 3 W.L. | No. 4 W.L | No. 5 W.L. | No. 6 W.L. |
|---|---|---|---|---|---|
| Displacement full, cubic feet | 378.3 | 780.5 | 1292.5 | 1893 | 2518 |
| Displacement full, tons | 10.81 | 22.3 | 36.92 | 54.1 | 71.92 |
| Tons an inch immersion | .804 | 1.102 | 1.315 | 1.474 | 1.558 |
| Center of gravity of waterplane aft of C. B. P., feet | +23 | —.36 | —1.076 | —1.92 | —2.25 |
| Longitudinal center of buoyancy aft of C. B. P., feet | —825 | —.46 | —.547 | —.82 | —1.182 |
| Vertical center of buoyancy above base, feet | 1.152 | 1.84 | 2.538 | 3.165 | 3.753 |
| Transverse metacenter above center of buoyancy, feet | 6.862 | 7.25 | 6.44 | 5.388 | 4.534 |
| Transverse metacenter above base, feet | 8.014 | 9.09 | 8.978 | 8.553 | 8.287 |
| Longitudinal metacenter above buoyancy, feet | 88.7 | 68.0 | 55.33 | 47.0 | 41.14 |
| Moment to change trim 1 inch, feet tons | 1.51 | 2.36 | 3.193 | 3.94 | 4.66 |
| Midship area, square feet | 13.27 | 26.2 | 40.84 | 56.5 | 72.4 |
| Wetted surface, square feet | 500 | 668 | 825.5 | 966 | 1078.3 |
| | Coefficients | | | | |
| Block coefficient | .3288 | .3719 | .4252 | .4795 | .521 |
| Prismatic coefficient | .570 | .896 | .633 | .671 | .696 |
| Midship area coefficient | .577 | .624 | .627 | .715 | .749 |
| Water plan coefficient | .587 | .652 | .727 | .784 | .813 |
| Vertical prismatic coefficient | .560 | .571 | .585 | .612 | .641 |



A further improvement was introduced into the lubricating oil system. It is force feed throughout and the waste oil that returns to the sump is removed from the system and passed through a No. 200 De Laval oil purifier to be cleaned and from there passed to the cooler tank. Ordinarily the oil is taken from the sump, run through a cooler in the circulating water system and back to the cooler tank. The fresh oil is taken from the storage tank to replenish the oiling system. The temperature of the lubricating oil rises to 134 degrees Fahrenheit after a hard run. The amount of lubricating oil recovered by this machine pays for the entire cost of the machine in a short while and leaves a handsome profit for the owner.

On the recently finished harbor boat the first run of the De Laval oil purifier took .289 per cent (practically three-tenths of one per cent) of sludge and grit from the lubricating oil, returning the cleansed oil to the lubricating oil system. The main engine was kept running to keep the lubricating oil warm, thereby facilitating the passage of the lubricating oil through the purifier. Fresh water is fed into the purifier to seal it, the water in turn being thrown off by the purifier. The unanimous opinion of all the engineers that saw the results is that removing the fine grit and dirt from the lubricating oil is going to cut down on the repair bills and increase the life of the engine.

# THE NEW MOTORSHIP TROLLEHOLM

THE motorship Trolleholm is built to the highest class of Lloyd's Register, 100 A-1, for the Swedish America Mexico Line of Gothenburg, the hull being constructed by the Kockums Mekaniska Verkstads Aktb., Malmo, Sweden (yard No. 141), and the machinery built, delivered and installed by Burmeister & Wain, Limited, at their yard in Copenhagen.

The principal dimensions and other particulars of the vessel are:

| | |
|---|---|
| Type of ship | Cargo |
| Length, b. p. | 370′ |
| Breadth, molded | 51′ 3″ |
| Depth, molded | 34′ 0″ |
| Draught, loaded | 24′ 8½″ |
| Displacement, loaded, tons | 10,450 |
| Deadweight capacity, tons | 7,535 |
| Stipulated normal average speed at sea, knots | 10.5 |
| Stipulated normal consumption of fuel oil per day, tons | 7 |
| Type of machinery | Burmeister & Wain's six-cylinder four-cycle. |
| Number of main engines | 2 |
| Cylinder diameter | 540 |
| Stroke | 730 |
| Revolutions per minute | 150 |
| Indicated horsepower | 2100 |
| Brake horsepower | 1625 |

The trial results over the measured mile in the Sound, July 15, were:

| | |
|---|---|
| Draught, average | 9′ 4¾″ |
| Displacement, tons | 3635 |
| Indicated horsepower, average | 2376.5 |
| Revolutions per minute, average | 159.5 |
| Speed, average | 11.735 |

### .302 Pounds per I. H. P. Hour

During the consumption test, the main engines developed 2299.0 i. h. p. at 156.5 revolutions per minute, at a fuel oil consumption of 137.08 grammes or 0.302 pounds per i. h. p. hour, net calorific value being 10,201 kg. cal. (18,400 b. t. u.), including the consumption of auxiliary engines producing the necessary electric current for the auxiliary machinery, steering engine and electric light.

The machinery is of Burmeister & Wain's standard type for twin-screw ships. The main engines are short stroke, forced lubricated cross head engines on the front end, fitted with three stage air compressors, suppying the necessary injection air for atomizing the fuel oil.

### Electrically Driven Auxiliary

All auxiliary machinery in the engine room as well as the deck machinery is electrically driven, the necessary electric current being supplied by three 50 kilowatt diesel dynamos. The voltage of the current is 220 volt, and for lighting purposes it is transformed down to 110 volts by means of a motor generator.

Each of the generators is sufficient for supplying the necessary current under normal working conditions at sea, whereas two or all three generators have to be started when the consumption of current is large, f. i. when maneuvering with the maneuvering compressor running, or when loading or unloading, the winches using much current.

The heating is effected by means of steam produced in a small cross tube boiler of about 100 square feet heating surface, this boiler also being able to deliver steam for fire extinguishing in holds.

At the trial trip were present, among other notabilities, the well known shipowner, Dan Brostrom, and also Filip Lindahl, representing the owners.

After the successful trial trip, the ship went back to the port of Copenhagen to land the officials and the trial trip crew, the same evening leaving for Malmo, Sweden, to go in service.

A photograph of the Trolleholm is reproduced on page 554.

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## FEBRUARY, 1919, ISSUE NEEDED

A REQUEST has been received from the Library of Congress for a copy of the February, 1919, issue of Pacific Marine Review, in order that the files of this magazine in the National Library may be filled. No copies of this issue are on hand. It is requested, therefore, that any reader who has a copy of the February, 1919, issue send it to Pacific Marine Review, 576 Sacramento street, San Francisco, whence it will be forwarded to Washington.

# THE LARGEST SINGLE-SCREW MOTORSHIP

## Yngaren is Engined with a Doxford Four-Cylinder, Opposed-Piston, Modified Junkers Diesel of 3000 Indicated Horsepower

THE Yngaren, of the Trans-Atlantic Steamship Company of Gothenburg, visited Pacific Coast ports during July, and a representative of Pacific Marine Review secured the pictures that illustrate this article.

Readers of Pacific Marine Review will know from numerous articles previously published in these columns that the Yngaren is the first large ocean-going freighter to be equipped with single-screw direct connection diesel propulsion. She was built by William Doxford & Sons at Sunderland, England, and engined by them with a 3000 I. H. P. four-cylinder diesel engine of their opposed piston modified Junkers type.

### Yngaren versus 8800-Tonners

The Yngaren is 420 feet in length, with a beam of 54 feet and a molded depth to shelter deck of 37 feet. On a draft of 25 feet 6 inches she has a displacement of 12,750 tons and a deadweight carrying capacity of 9350 tons. She figures a gross tonnage of 5200 and a registered net tonnage of 3400. The hull is a Doxford standard model, of which many examples are being propelled by steam power over the trade routes of the world. Incidentally, it is rather curious and a subject for thought on the part of American shipowners that our standard Shipping Board freighters, 410 feet long, 54.5 feet beam and 27.2 feet deep, should have with deadweight carrying capacity of 8800 on 24 feet draft a gross measurement tonnage of 6000 and a net of 4553. Something wrong with our standards, either of construction or of measurement.

The Yngaren is amply provided with cargo handling gear, having nine electrically driven cargo winches of Swedish manufacture. This is rather slow on rope speed for American practice, but it takes care of general cargo very nicely.

The chief interest in this ship, however, lies in the main propelling engines and the smaller engines of the same type driving the generating units for electric auxiliary power.

### Recalls the S. S. China

The impression one gets on entering the engine room is of massiveness and effective power. The arrangement of gratings recalls the slow speed compounds and triples of such ships as the China. There is a noticeable absence of valve tappets and levers about the head of the engine, where the only moving members are the upper piston rod, yoke, connecting rods and the swinging links, which form the supply and discharge ducts of the cooling water from the upper piston. This marked simplicity of detail is plainly shown in the photograph taken on the upper platform by a staff photographer.

Above, the Yngaren. Below, the control stand on the lower platform of the engine room—Photos by Pacific Marine Review staff photographer.

Dropping down to the middle platform, another good picture was obtained showing the starboard fuel valves, the camshafts and the fuel oil strainers. In the latter the fuel, under a pressure of 8000 to 10,000 pounds a square inch, is driven through cylindrical strainers on its way to the atomizing nozzles in the fuel valve.

### Cylinder Arrangements

There are two fuel valves in each cylinder located on opposite sides of the central combustion chamber and staggered as to vertical position so that the entire space of the chamber is filled at the moment of injection with a very finely divided oil mist. The two square boxes on brackets in the picture of the middle platform each contains four cylindrical plugs. Each plug is a hollow cylinder of steel with its walls drilled with approximately 700 holes of a diameter small enough to exclude any particles that would clog the atomizing nozzle. A number of spare strainer plugs are carried, and they can readily be changed or cleaned at any time without disturbing normal operation.

As will be seen from the illustration, the control stand, located on the lower platform at the starboard side, is very simple, the whole starting, operating and maneuvering operations being directed by the rotation of a single wheel.

A Cochrane donkey boiler is installed to supply steam for heating heavy fuel oils, warming up the engines at starting, and running an evaporator to provide make-up fresh water for cooling cylinders and pistons. The only salt water used for cooling purposes takes care of the water-jacketed silencer or exhaust manifold.

### The Scavenging System

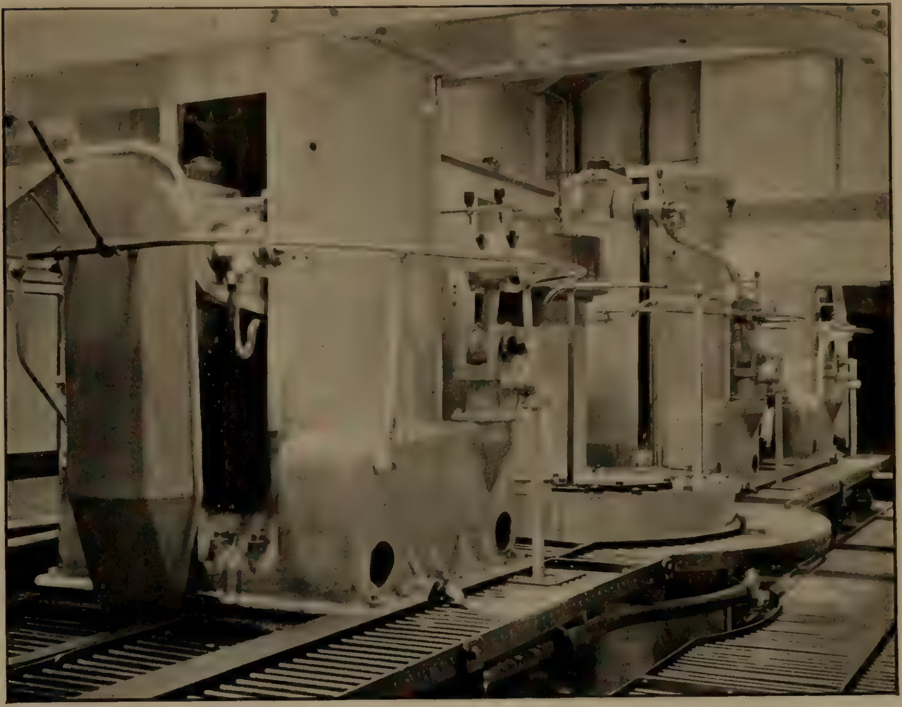
Scavenging air is provided by a low pressure piston air pump located between cylinders 2 and 3 and driven from the crankshaft. This pump delivers air at 1½ pounds' pressure to large trunk manifolds that completely surround the engine frame at the level of the cylinder bottoms. This air admitted through ports sweeps through the cylinders from bottom to top, driving the products of combustion out at the top ports into the water-cooled exhaust manifolds. The scavenging action on this engine has been well nigh perfect even with the heaviest fuels.

All the valves at the cylinder wall are simple non-return valves actuated by the fuel or starting air pressure. This keeps the valve operating mechanism and the working parts of valves away from the heat conditions of the cylinder and in more accessible locations. The starting valves are in pairs between cylinders and are worked from the camshaft, the starting air going from these valves through pipes to the non-return checks at the cylinder wall.

### Vibration Almost Negligible

The fuel valves are also indirectly worked. A special feature of these valves is the entire absence of packing. The fuel pumps, which supply fuel through these valves at a pressure of from 8000 to 12,000 pounds a square inch, are also notable for the absence of stuffing boxes and packing, all seals being made with grooves on large working surfaces on the plungers.

The Yngaren on the run from San Francisco to Port Costa started on twenty minutes' notice. The engine took hold on fuel in less than one revolution. Maneuvering at both docks was accomplished without a hitch, and the engines on a trying draft condition with part of the propeller hub showing ran with great smoothness and a very noticeable quietness at speeds from 17 to 77 revolutions a minute. The almost complete freedom from vibration in both the auxiliary and the main engines was another very noticeable feature.


Upper crosshead-guides of the Yngaren. Note ingenious toggle-joint and swinging link arrangement of piping for cooling water for the upper piston

The Yngaren has an engine room personnel totaling 14, including the electrician. She burns from 9 to 9½ tons of fuel oil a day for all purposes at sea while carrying 9350 tons at the rate of 10½ knots an hour. Looking at it another way, one gallon of fuel oil put through these engines will carry a ton of freight 840 miles.

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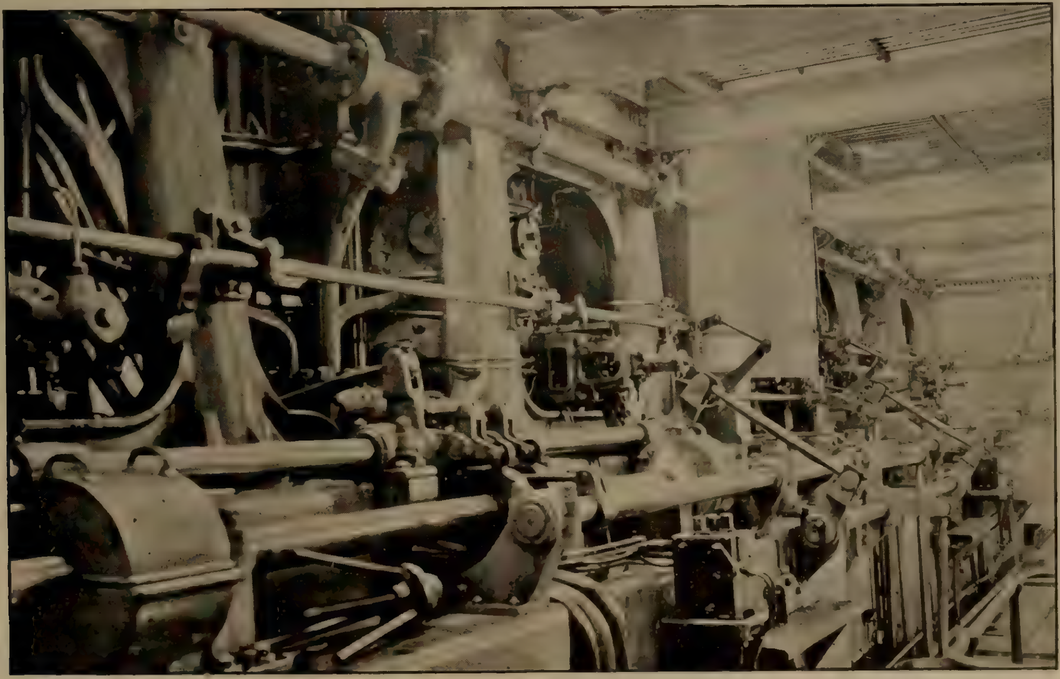
Disposition of twenty-seven diesel engines sold by the United States Shipping Board Emergency Fleet Corporation was as follows: 900 H. P.—13 to the War Department; 2 to the Munson Line, New York; 825 H. P.—2 to the Standard Oil Company of California; 3 to Frank Lynch of Benson Lumber Company, San Diego; 1 to Federal Light & Traction Company, New York City; 4 to the Moore Shipbuilding Company, San Francisco; 320 H. P. oil engines—2 to Carry Davis Towing Company, Seattle, Washington.


View looking forward along the starboard side of engine at middle platform, showing fuel valves, strainer box and cam shafts

# APPLYING THE DIESEL-DRIVEN HELICAL PADDLE TO A STERNWHEELER

## An Interesting Experimental Design for the Efficient Application of Internal Engine Propulsion to Shallow-Draft Canal and River Boats

By DAVID W. DICKIE

EVERY once in a while the writer receives an inquiry as to what has been done to apply the diesel engine to the sternwheeler. The practice for a while past has been to work out a mechanical reduction gear that did two things: to reduce the number of revolutions per minute to that of the usual paddlewheel and at the same time to turn the motion of the shaft at right angles to that of the engine.

In the magazines in 1912 appeared designs of speed boats using two propellers driven in opposite direction, the propeller shafts and the hubs of the propellers being above water and the blades below the center only being used for propulsion. The results obtained compare very favorably with the practice of submerging the propellers entirely. Further experiments in 1916 demonstrated conclusively that it was possible by this method to drive approximately twice the displacement at the same speed as with the usual method.

Take as a basis the performance of a Pacific Coast sternwheeler built of wood:

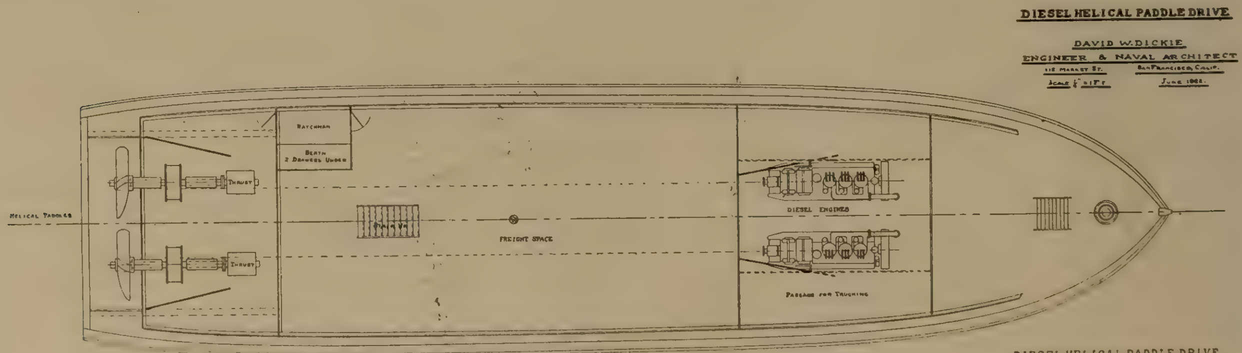
| | |
|---|---|
| Length from the rabbet of the stem to the after side of the transom | 100′ 0″ |
| Depth from the top of deck beams to bottom of floor timbers at side | 5′ 2″ |
| Depth from the top of deck beams amidships to under side of floor timber | 5′ 6″ |
| Breadth molded at under side of deck beams | 22′ 1″ |
| Breadth over planking | 22′ 6″ |
| Breadth over guards | 26′ 5″ |
| Crown of beams, 4 inches in | 22′ 0″ |
| Height from the top of main deck to under side of saloon deck | 8′ 0″ |
| Height from top of saloon deck to under side of awning deck | 7′ 3″ |
| Draft of water with tanks 1/3 full and 3 tons of fuel to keel | 3′ 0″ |
| Speed (miles, 10), knots | 8.7 |
| Indicated horsepower | 139.3 |
| Boiler 16′x60″, steam allowed, lbs. | 150 |
| Cross compound paddle engine 14″ and 28″ diam. by 36″ stroke, turns, r.p.m. | 26 |
| Displacement, tons | 132 |

A comparison of the weights of the steam paddle driven plant and a diesel plant of practically the same power is as follows:

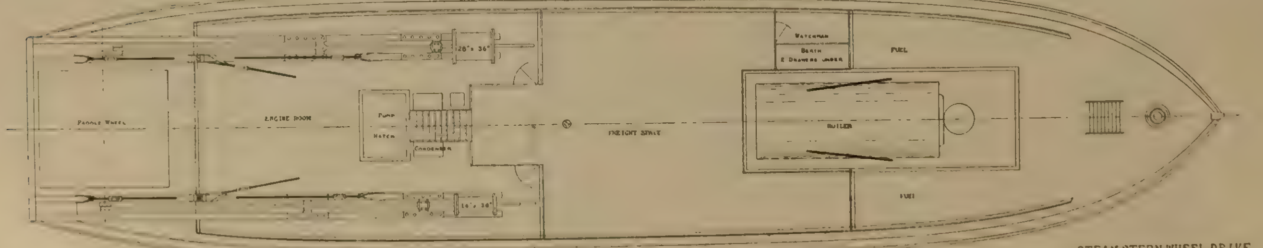
| | Lbs. |
|---|---|
| Boiler with water at steaming level | 64,670 |
| Engine feed pipes and valves | 16,800 |
| Paddlewheel; shaft, boxes, centers, rim and wood-work | 8,240 |
| Condensers, pumps, sanitary pump, electric light plant, engine stores and water in machinery | 15,340 |
| Fuel | 6,720 |
| Make up feed water, 3000 gallons | 25,000 |
| Total | 136,770 |

Assuming fuel tanks the same in each case:

| | Lbs. |
|---|---|
| Diesel engine (2), 9¼″x14″ (3 cyl.) | 31,400 |
| Auxiliary engine | 475 |
| Electric engine | 1,552 |
| Intermediate shaft | 6,490 |
| Propeller shafts | 3,080 |
| Bearings (6) | 884 |
| Reduction mechanism | 1,000 |
| Propellers | 1,100 |
| Fuel piping | 36 |
| Strainer tank | 219 |
| Lubricating oil storage | 219 |
| Air bottles | 1,741 |
| Exhaust piping | 1,100 |



DIESEL HELICAL PADDLE DRIVE



STEAM STERN WHEEL DRIVE

| | |
|---|---|
| Lubricating oil cooler | 120 |
| Sea cocks | 128 |
| Four-inch pipe | 154 |
| Sea piping | 198 |
| Bilge piping | 396 |
| Auxiliary exhaust | 90 |
| Pans | 80 |
| Whistle and piping | 75 |
| Indicators | 30 |
| Whistle tank | 68 |
| Priming tank | 210 |
| Oil purifier | 177 |
| Fuel | 6,720 |
| Total | 57,742 |

For practically the same power available at the propelling medium there is a saving in weight of 79,028 pounds, or 35 tons. This saving in weight can be used for cargo or for reducing the displacement to get increased speed, and besides there is considerable saving in space, as shown by the drawings.

A careful mathematical survey of the helical paddle, that is, a propeller the blades of which are only partly in the water, shows that the surface friction and edge resistance of two of the three blades can be saved, which amounts to 25 per cent of the total power required by the propellers to drive the boat.

First a calculation was made connecting the propeller directly to the diesel engine, but as the revolutions of the engine could not very well be reduced below 280 per minute the propeller was too small to be efficient on such a large boat, being only 5 feet 4 inches diameter and 3 feet 8½ inches pitch. The dip had to be 2 feet 9 inches and this brought the hub too close to the water properly to use the theory involved.

A curve of propeller sizes was plotted and at 140 revolutions per minute the propeller came 7 feet diameter and 7 feet 5 inches pitch, which was not only more efficient but was much better in practical dimensions to fit the boat.

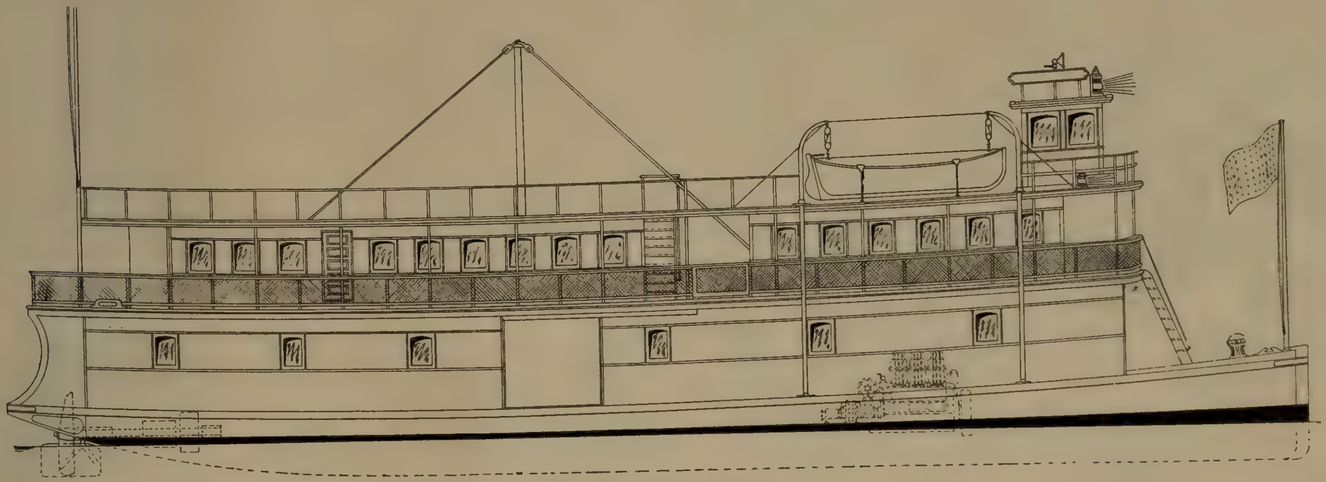
A careful survey of the problem of using gears showed that they would be too expensive and too difficult to keep in line on a boat of this type and it is much better to use a special belt reduction both as to cost and alignment.

With respect to the arrangement, the engines may be placed as shown with a portable bulkhead fitted to enclose the engine while trucking fore and aft alongside of the engines and used to form the continuation of the athwartships bulkhead at each end of the engine room, or the engines may be placed one forward of the other and at the proper position "off center" to allow the shaft from the forward engine to pass the after one. The control gear for bringing the operation of the two engines to one platform has to be arranged to suit.

While this article was in course of preparation an experiment of Denny Brothers Shipbuilding Company was published for a boat near enough to the dimensions of the above sternwheeler to definitely confirm the theory in every respect, as the following data shows: length, 1000 feet; draft forward, 4 feet 5½ inches; mean draft, 4 feet 6¾ inches; breadth, 23 feet 5 inches; draft aft, 4 feet 8 inches; displacement, 186 tons; at a speed of 9 knots, 10.35 miles.

The following results were obtained:

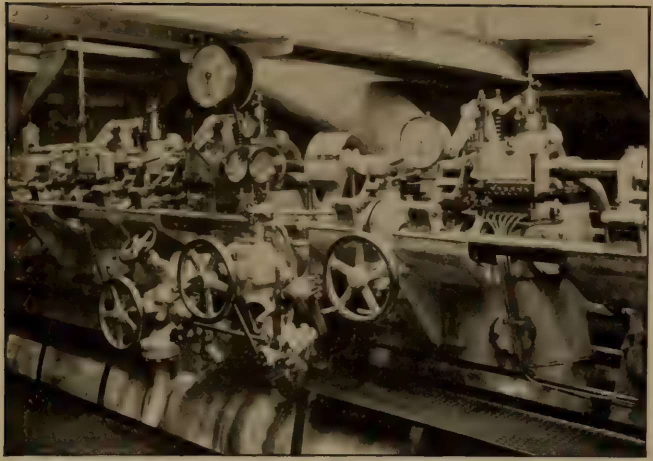
| | Twin Screw Propellers under water | Helical Paddle above water |
|---|---|---|
| Diameter | 4′ 0″ | 11′ 0″ |
| Pitch | 5′ 8″ | 16′ 0″ |
| Number of blades | 3 | 3 |
| Total disc area, sq. ft. | 25.14 | ........... |
| Total projected area, sq. ft. | 10.2 | ........... |
| Immersion of the tips in still water | 3′ 7/16″ | ........... |
| Revolutions per minute | 226 | 66 |
| Total sectional area of water acted upon at full speed, sq. ft. | ......... | 59.26 |
| Effective horsepower | 77.5 | 77.5 |
| Shaft horsepower | 197 | 116 |



Diesel helical paddle drive

# 30,000 MILES IN SIX MONTHS

THE 9000-ton motorship Handicap, propelled by two Sulzer two-cycle diesel engines of 1350 B. H. P. each, has been in regular service since December 24, 1921, and has made the following voyages: 1921, December 24 to December 31, Stavanger to Newport, England, about 980 miles; 1922, January 10 to February 5, Newport to Bahia Blanca, about 6390 miles; March 9 to April 8, Bahia Blanca to Hamburg, about 6950 miles; April 23 to May 14, Hamburg via Bilbao and Key West to Port Arthur, Texas, about 5450 miles; June 2 to July 15, Port Arthur via Panama Canal to Amoy, about 9600 miles; total, 29,370 miles.



Control station on upper platform of one of the main engines of the Handicap

The following particulars of these voyages will be of interest:

The amount of fuel required daily amounts to 9.4 to 9.7 tons, and the speed of the ship is 10½ to 12 knots, depending upon whether she is fully laden, or only partly or in ballast. This consumption includes the fuel consumed for all auxiliary machinery, lighting, heating, cooking and working the steering gear.

The auxiliary engines during the voyage developed an average of 159.4 B. H. P., distributed as follows: turbo-blower, 105 B. H. P.; cooling-water pump for cooling engines, 10 B. H. P.; other machinery, lighting, cooking, heating and steering, 44.4 B. H. P.; total, 159.4 B. H. P.

### Low Scavenging Pressure

Worthy of note is the low scavenging-air pressure of the main engines, which is attained by the Sulzer scavenging system and the adoption of turbo blowers; the pressure is about 700 mm. (27½ in.) water gauge.

As a proof of the favorable temperature conditions in the engine rooms of motorships. it is interesting to notice from the ship's log that, when the temperature in the shade was 28° C. (82° F.) and with sea water at 28° C. (82° F.) the temperature below in the engine room did not rise above 32° C. (90° F.). Under these conditions the cooling-water left the engines at a temperature of about 45° C. (113° F.). These were the conditions prevailing in the tropics.

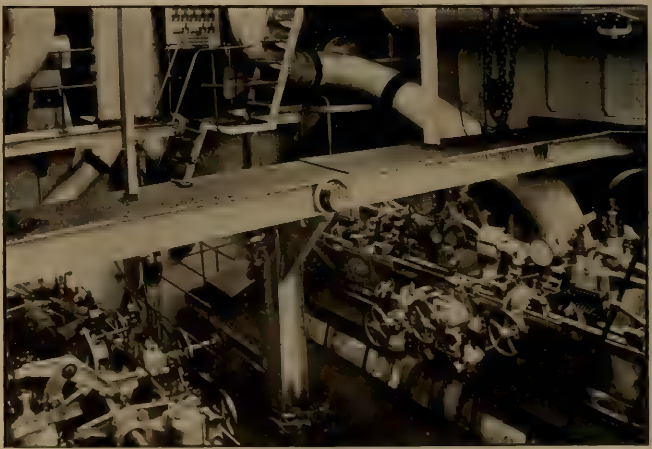
Specially interesting is the last voyage of the ship from Port Arthur, Texas, to Amoy, when about 10,000 miles was traversed in 43 days without a stop. In Port Arthur the ship took in a cargo of kerosene in tin cans for China. There were in all 225,000 cases of two cans each with a total weight of 8240 tons. Nearly all these cases were taken on board by the ship's own electrically driven winches, and it was a pleasure to see how satisfactorily this method of handling cargo worked. Loading this cargo, of course, required a long time, from May 15 to June 2. The ship has a deadweight capacity of 8940 tons, and in order to make as much use of this as possible, a total of 700 tons of fuel was bunkered. In crossing from Port Arthur to China 410 was consumed, so that 290 tons remained in the bunkers, a quantity sufficient for a further voyage of 7250 miles. Captain G. Sandaa, who has had many years' experience with steamers before taking over the command of the Handicap, said that a steamer of about the same cargo carrying capacity would require at least 35 to 40 tons of coal a day.

In order then to have the same radius of action as a motorship with 700 tons' bunker capacity, the steamer would have to take on board at least 2730 tons of coal, and could therefore carry only about 6210 tons of cargo instead of the 8240 tons carried by the motorship, that is, 2030 tons less. If the freight rate from the United States to China is taken at $10 a ton, this would mean $20,300 less earned by the steamer than by the motorship; certainly a very considerable difference. In reality, however, the steamer would not take such a large quantity of coal on board, but, when possible, try to make the voyage in shorter stages, taking in coal at intermediate ports, for example, at Colon, Honolulu and elsewhere. Even if the conditions of working can be made more favorable in this way, there are other disadvantages caused by such a method of voyaging. Several ports must be called at, thus entailing loss of time and also increased expenses for pilot, harbor, tug dues and brokers. The ship cannot make the voyage by the most direct route, and, in addition to this, the cost of coal at ports such as Colon and Honolulu, which are far from any coal fields, is great. Bunkering with coal for the voyage from Port Arthur to China would entail a loss of time of four or five days. There would also be a few hundred dollars' expenses at each place for harbor dues, etc., and also a consumption of fuel while in port of about five tons of coal a day, for keeping up steam in the boilers, for driving the winches, etc.

### Can Bunker Easily

When all circumstances are taken into account, the balance is greatly in favor of the motorship. It should also be considered that the motorship, in consequence of its greater radius of action for a relatively smaller bunker load, is always able to take fuel where it can be bought under the most favorable conditions. Bunkering itself can easily be carried out in a very short time by pumping through pipe lines and therefore entails practically no loss of time. Bunkering with coal is inevitably a dirty job, while bunkering with oil is clean. The ship, therefore, does not require so much painting and much less work is necessary to keep her clean.

Taking the cost of crude oil bunkered at Port Arthur at $10 a ton and coal at Colon or Honolulu at an average of $10 a ton, including the cost of bunkering, the cost of fuel for the voyage by a steamer amounts to about $15,000 as compared to $4100 for a motorship, so that here also there is a considerable saving, about $10,900. The relatively small dimensions of the Sulzer engines of the Handicap have the advantage of allowing an effective cargo-carrying capacity of 488,850 cubic feet, which is worthy of note for a ship 415 feet long, 54 feet 6 inches broad and drawing 24 feet 8 inches. The Handicap arrived at San Francisco from the Orient September 16.



A view in the engine room of the Handicap

# A NEW PACIFIC COAST DIESEL

## Los Angeles Firm Develops and Builds a Marine Diesel Engine with Several Unusual Features of Construction and Operation

THE Adams diesel engine is manufactured by E. T. Adams & Sons, 5529 Bicket street, Los Angeles, California, under the company's patents now pending. It is a full diesel, working on the two-stroke cycle, with mechanical atomization and mechanical injection of the fuel.

The company builds these engines in sizes up to 250 horsepower, the design being based on the belief that engines of this and smaller sizes must be simpler and easier to care for and operate than engines of greater power, and must be capable of giving uninterrupted service under working conditions that the moderate power engine has to endure.

The base is of the usual marine type with babbitt-lined removable shells bedded in bored seats. The shaft is of high grade steel, fully counterweighted, and is drilled for forced lubrication. The connecting rods are notable for the large size of the piston pin bearing and its thorough lubrication. The connecting rod is drilled and the pins receive forced lubrication from the shaft. The crank pin boxes are of the standard marine type, with bronze boxes tinned and babbitted with a high grade tin-base babbit. The boxes are held in place by chrome vanadium bolts and Drake lock nuts.

### Frame Castings

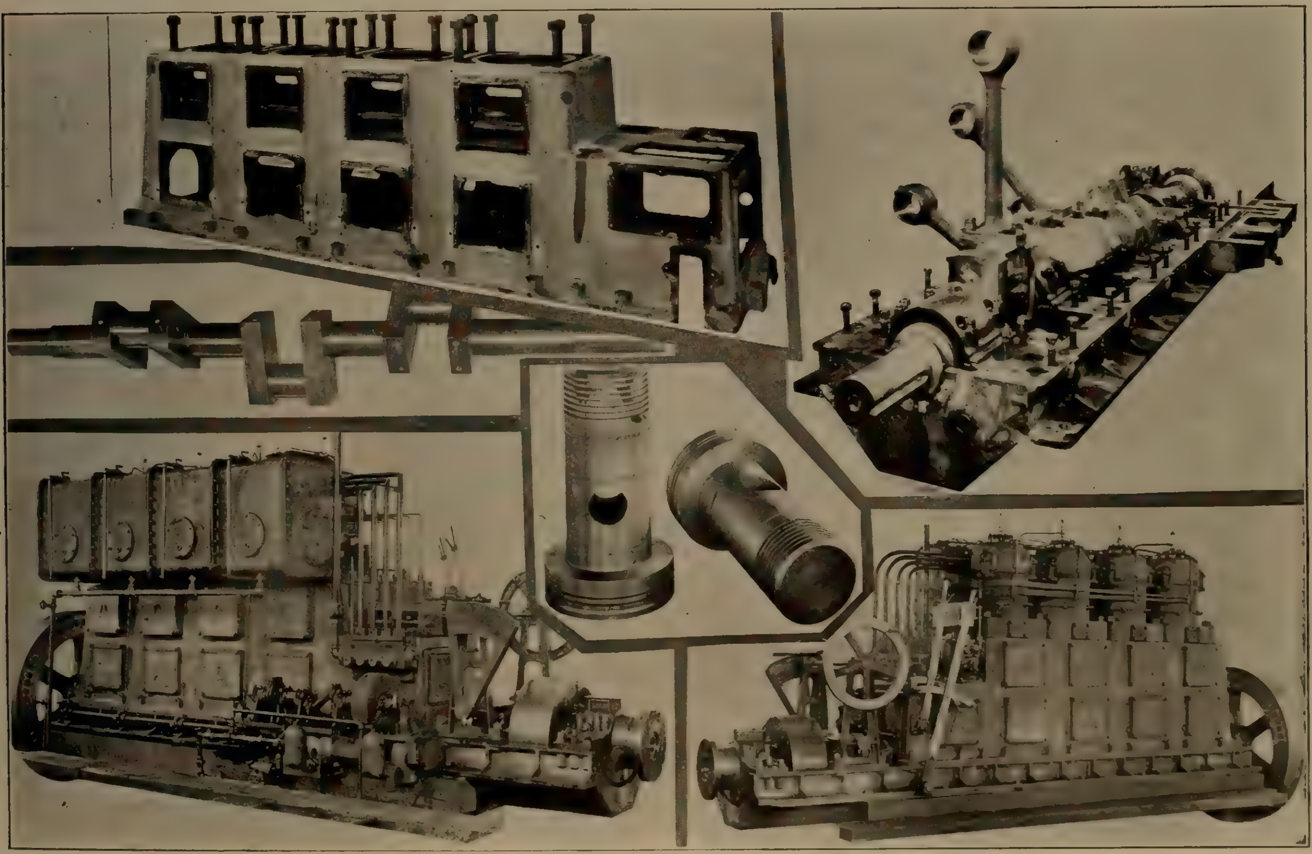
The sub-base is extended aft to carry an idling clutch and standard type water-cooled thrust bearing. On the port side is an extension on which are mounted bilge, water circulating, fuel supply, and lubricating oil circulating pumps. The arrangement of drive, as is clearly shown in the illustrations, keeps the enclosed driving mechanism flooded with oil, and brings the piping connections outside where they are easily accessible.

The frame when bolted to the sub-base makes of the two a very rigid construction capable of maintaining the main bearings in alignment under all conditions.

The frame is divided horizontally into two zones. The upper forms a storage for scavenging air, a separate storage for each cylinder. The lower portion is open and forms the crank case proper. The frame is bored to receive liners to form the bore of the lower or scavenging air piston, which when in place cuts off all communication between the crank case and the scavenging air storage. Thus all scavenging air is kept out of contact with lubricating oil, and the pins and bearings may be and are flooded with oil without the losses and dangers that this would entail in an engine of the crank case compression type.

### Piston and Cylinder Design

The piston is of the step type. The upper end is the working piston. The step forms a crosshead and also a compressor piston for the scavenging air, which is compressed by the differential between the upper and lower piston. This gives a large excess of scavenging air—one of the advantages of this construction. The top of the working piston is flat—a novel construction original in this engine and one on which patents are pending. The omission of all ridges and de-



Views of the assembled Adams diesel engine and of several of its details. Upper left shows casting for frame with studs for cylinders in place. Upper right shows sub-base with crank shaft, connecting rod and main bearing caps in place.
In the left center is shown a crank shaft, in the center two pistons. Lower left shows engine from port side; lower right starboard side of engine.

flectors on a piston marks a distinct advance over the ordinary construction. It is made possible by the design of the air ports in the cylinder wall and has proved most satisfactory in service.

The main working cylinder centers on the air cylinder in the frame and is held in place by four large bolts reaching deep down into the frame. By this arrangement the air ports in the cylinder open directly into the scavenging air storage. The cylinder is water-jacketed its entire length, with scavenging air ports and exhaust ports cast in the side walls. This relieves the cylinder head of all openings save the one central opening for fuel injection, and results in a fine symmetrical casting free from all casting strains.

The oil-burning system is another exclusive feature of the engine, one on which a number of patents are now pending. It consists of an oil injection or spray valve that injects oil into a primary chamber, where combustion originates and from which the burning mixture is expelled into the main combustion space, where it is completely burned. This primary chamber is thoroughly water-cooled and oil is not injected into it until practically at dead center. Its office is to synchronize the action of all the elements in the burning system. In this it is very successful. Oils of almost any gravity may be burned in the engine with no change or adjustment of the oil burning system. The spray valve opening is very large to prevent danger of clogging, and the fuel pump pressure very low—a combination that makes a spray sufficiently atomized, but without sufficient velocity to insure thorough mixing with the air if injected into the main cylinder direct. This desired result is obtained by means of the rise of pressure within the small primary chamber, which supplies the force to insure complete mixture of air and fuel.

The fuel pumps, air, compressor for whistle air, speed regulator and air starting device are all concentrated in an extension of the frame leading aft from the cylinders. This extension houses all the working parts of this mechanism and also encloses the cams which operate the fuel pump.

The engine is reversed by shifting the fuel cams, cams for ahead and reverse being cut in one forging.

The engine is started by compressed air, which is admitted to each cylinder in turn. An air pressure of 300 to 400 pounds is used for starting.

The engine shown is installed in the Gryme, a 100-ton motorship belonging to the Vancouver & San Diego Navigation Company of San Diego. This company, of which George W. Beermaker is president, has long been identified with the trade from San Diego to Mexican ports along the peninsula of Lower California, and is an important factor there in the trade between the United States and Mexico.

The motorship Handicap at Port Arthur, Texas. See page 577

# A NEW BOLINDER ENGINE

A 50 B. H. P. two-cylinder Bolinder fuel oil marine engine was put on the testing stand of the Acme Engine Company, 163 Main street, San Francisco, the middle of June and ran for eight hours a day for three months without the slightest trouble or interruption. The engine has no inlet or exhaust valves and thus grinding was obviated.

The engine is of the NE I model, incorporating all the latest improvements made by Messrs. Bolinders & Company. The water injection has been eliminated; also the air injection for the fuel oil, which was used on the larger sizes of engines only to obtain perfect combustion. By this means the fuel oil consumption is less and the control is simplified, giving a much more uniform and a much smoother running engine and permitting idling of the engine for an indefinite length of time. This engine also has the improved control for speed regulator, the speed increasing automatically as desired after the clutch has taken hold and also preventing racing after clutch is thrown out. The bilge and circulating water pumps are equipped with safety valves which prevent breaking of any part. Fuel pumps, of which there are two, one for each cylinder, also have been improved and are equipped with new type suction and discharge valves.

The fuel oil manifold is at end of muffler, heating the oil to some extent, so that the fuel pumps will handle the oil better. Fuel strainers are in the suction line between pumps and manifold. The crank shaft is of large dimensions and designed to Lloyd's specifications, as all other parts, such as connecting rods and bearings, which are now water-cooled.

The engine is equipped with one improved lubricator with direct-connected lubricating pumps driven by improved ratchet wheel with drive pawl, arm and stop spring, assuring efficiency without wear.

The cylinders have separate control air dampers, increasing the efficiency of the engine, and the heads are water-cooled, doing away with the disadvantage of the former heat and the danger of cracking. Besides the torches, an electric device for quick starting from cold in 30 seconds is furnished on the engine when desired. It can be removed after the engine has been started.

The new type fuel injection device is adjustable while the engine is running and mounted on ignition bulb. Being water-cooled, it keeps the temperature of the ignition bulb down. Besides the improvements stated above, there are many others.

The engine mentioned will be installed on the river freighter Sea Lion.

# A NEW ZEALAND EXPRESS SERVICE

## Fast Nightly Sailings Maintained Between North and South Islands by Maori and Wahine of the Union Steamship Company

THE Union Steamship Company of New Zealand's express steamers Maori and Wahine maintain a regular night service between the North and South Islands of New Zealand, one of them leaving Wellington and the other leaving Lyttleton every night except Sunday. The distance between the ports is 175 miles, which the steamers traverse in about ten hours, connecting with the express trains at either end. The vessels have room for the mails and a small quantity of cargo, but the greater portion of their space is devoted to passengers, sleeping accommodation being provided for every passenger carried.

The Maori was built at Dumbarton in 1907 by W. Denny & Brothers, and engined by Denny & Company. She has a length of 350 feet, a beam of 47 feet, and a depth of 26 feet molded, the gross tonnage being 3488. Propulsion is effected by means of three sets of Parsons steam turbines working up to 6500 horsepower. The high-pressure turbine is brought into action when under way, the two low-pressure turbines (port and starboard) being utilized in port and also at sea. There are two double-ended boilers 20 feet 6 inches by 14 feet 9 inches and two single-ended 10 feet 6 inches by 14 feet 9 inches, with a total of 18 corrugated furnaces of 3 feet 9 inches inside diameter. There are three 3-bladed solid propellers, each 5 feet 4 inches in diameter, with a 4-foot 7-inch pitch. Two condensers are installed, each having 1740 ¾-inch tubes of 10 feet 5¼ inches in length, affording a total cooling surface of 7000 square feet. The diameter of the propeller shafts is 7¼ inches and of the tunnel shaft 6¾ inches, the propellers at full speed making 500 revolutions per minute. Electric lighting throughout the vessel is made available by two powerful Siemen's dynamos. Her trial speed was 21 knots.

### Entire Vessel for Passengers

Being primarily intended for the night mail service between Wellington and Lyttleton, almost the whole of the vessel is devoted to passenger accommodation. There is a shade deck extending from the stem almost to the stern, on which is situated the first-class music-room, a large apartment designed in the "Adams" style, executed in mahogany and finished in white enamel. The furniture is in dark mahogany. Abaft the music room is the principal companion and vestibule, which is treated in a free classic design. Amidships on this deck is the first-class smoking room, which is finished in a simple classic design, executed in teak and Hungarian ash. A number of passengers' cabins are also fitted on this deck. The deck below is the "upper deck" proper of the vessel, and the forward end of this is devoted to seamen's and firemen's accommodation, which includes separate messrooms, bathrooms and lavatories of a spaciousness and comfort altogether unusual. The 'midship portion of the vessel is occupied with first-class staterooms. The main deck is fitted up for first-class passengers from the chain locker as far aft as the forward funnel, also along the port side of the machinery space, the starboard side being devoted to the culinary department. The engineers are berthed on this deck alongside of the engine room where they have direct access to the machinery space. The space abaft the turbine hatch is fitted up for second-class passengers. The forward end of the lower deck is fitted up for first-class passengers. Abaft the forward hatch on this deck is the first-class dining saloon, the design of which is of a free classical type executed in mahogany, finished in enamel white. Abaft the machinery is the second-class dining saloon, which is more highly finished than is customary even in high-class vessels. It is framed in mahogany and finished in white enamel similar to the first-class saloon. The Maori has accommodations for 483 first-class and 166 second-class passengers, with an additional 109 at rush times, making 758 in all.

The Union Steamship Wahine

The Union Steamship Maori

### A 22-Knot Steamer

The Wahine was built at Dumbarton in 1913 by W. Denny & Brothers and engined by Denny & Company. Her gross tonnage is 4436 and her dimensions are 374 feet b. p. by 52 feet by 27 feet 6 inches molded. She has two masts and two funnels and is propelled by three sets of Parsons improved turbines, the center being high pressure, the port and starboard engines being each low pressure, each low-pressure shaft being fitted with a reversing turbine for going astern. Steam is generated in eight large Babcock & Wilcox water-tube boilers, each of 1500 horsepower capacity, making a total of 12,000 horsepower when the boilers are being worked at their maximum pressure. Her speed on trial was 22 knots.

Provision is made for berthing 493 first-class passengers in single, double, three and fourth-berth cabins on four decks, and the vessel has in addition several cabins de luxe fitted up with wide beds, handsome wardrobes, baths, etc. In the second-class division there is accommodation for 260 passengers in enclosed cabins, fitted with spring mattresses, hot and cold plunge and shower baths, extensive lavatories, etc. In addition to the above the Wahine is licensed to carry 90 extra passengers during an extra busy rush, making a total of 843 passengers. Special provision has been made for equipping the Wahine with lifeboats, of which she carries sixteen, besides two smaller boats, her boat equipment being in excess of the "lifeboats for all" standard. To expedite the rapid launching of the lifeboats during an emergency, patent davits have been installed on the boat deck, and to render the process quite independent of the engines and boilers during darkness and emergency, there is a special dynamo, driven by an oil-engine, placed on the boat deck, which may be brilliantly lighted up while the remainder of the steamer is in total darkness. The vessel is illuminated by 1700 electric lamps, operated by two dynamos, one of them being kept as a stand-by in case of breakdown. Fire is guarded against by means of Clayton's patent fire extinguishing apparatus, and the whole ship is ventilated by special machinery.

### Has a Bow Rudder

There are three hatches for cargo, each having two derricks and one or two winches for the rapid handling of cargo, and in addition to the usual steam capstan she carries a "quick warp" to ensure rapid berthing at the wharf on arrival. Besides the ordinary rudder astern, the Wahine is fitted with a bow rudder, by means of which her maneuvering capacity is fully doubled. Her steering is operated by means of a patent hydraulic telemotor, and in the event of any mishap to the steering machinery the vessel can be steered by hand gear by means of Brown's patent machinery. To facilitate berthing at wharves there is a Chadburn docking telegraph, with repeat dials at the stern, and, in addition to these latest devices, the commander can give his orders from the flying bridge by loud speaking telephones to the engine room, the look-out forward, and the berthing officer at the stern. The Wahine is equipped with wireless telegraphy, an emergency set being available when steam is not procurable.

The main dining saloon is situated on the lower deck. The smoking room, music room and social hall are situated on the promenade deck, being lighted by large square ports, which command a wide view. The second-class dining saloon is on the upper deck at the after end of the ship. All the interior metal fittings are of heavily electroplated brass. The seamen's quarters are situated in the forecastle, and include hot and cold baths, mess rooms, etc., besides a specially designed system of ventilation. The captain and officers are quartered on the boat deck, with baths, etc., for their exclusive use. The engineers' quarters are on the upper deck, where similar conveniences are provided for the engine room staff.

The Wahine has a long record of war service. She was chartered by the British Navy in 1915 and, after being employed for some months in the Mediterranean as a fleet messenger, was used up to the end of the war as a mine-layer and laid over 11,000 mines in the North Sea and English Channel.

# A VICTORY FOR SHIPOWNERS

IN a decision handed down in the United States District Court, San Francisco, August 28, Judge Dietrich sustained a motion of attorneys of the Pacific American Steamship Association and the Shipowners' Association of the Pacific Coast to dismiss a suit brought by Alfred Street, a member of the International Seamen's Union, to restrain the steamship associations from conducting an employment bureau in order to give all seamen, union and non-union, an opportunity for employment. Although further action probably will be brought by union seamen, the first bout is a victory for the shipowners, and as such will be of interest to others who have inaugurated similar employment bureaus. The document of most interest, that is, Judge Dietrich's decision, follows in full:

In the United States District Court for the Northern
District of California, Southern Division

Albert Street, Plaintiff,
vs.
Ship Owners' Association of the Pacific Coast, et al., Defendants.
Memorandum Decision Upon Defendants' Motion to Dismiss.

August 28, 1922

Dietrich, District Judge:

So far as I am advised, the suit is without precedent, and I have been unable to formulate any theory of law upon which the complaint can be sustained.

In the execution by the defendants of the scheme of employment and discharge to which the plaintiff objects, they may possibly violate some of the provisions of the Shipping Commissioners' Act (Rev. Stat. U. S., Sec. 4501, et seq.), but not necessarily. This act neither provides nor contemplates compulsory service or employment: the commission is without authority to require a seaman to take a job or the owner to furnish one. It is entirely optional with the parties to say whether they desire under any circumstances to engage with each other, but if they do so desire they must conform to certain requirements prescribed by law—which it is the duty of the commission to see are not ignored or violated. That is the scope of the act. To be sure, the commissioner and his associates may also furnish some assistance as a sort of employment agency in a popular sense, but their service in that respect is not exclusive. Such bureaus may be maintained by either seamen or employers independently and may render material assistance without impigning upon either the letter or the spirit of the statutes.

Nor have I been able to apply to the fact of the case the anti-trust law. Though approaching its prohibitions the case as pleaded does not fall within their reach.

Besides, the plaintiff is not shown to have any standing entitling him to seek in court the general relief for which he prays. He is not in a position to vindicate general governmental policies, nor is he "the agency to establish the public welfare."

Gassaway v. Borderland Coal Corporation,
278 Fed. 56.

Nor does he connect himself with the rule of practice of which he complains. If he has a legal right to employment of which he is deprived by the alleged wrongful practice, let him present himself and comply with all lawful conditions, and if thereupon his tender of service is declined he may resort to the courts for protection or relief.

"The desire to obtain a sweeping injunction cannot be accepted as a substitute for compliance with the general rule that the complainant must present facts sufficient to show that his individual needs require the remedy for which he asks."

McCabe v. A. T. & S. F. R. R. Co., U. S. Supreme
Court 59 L. Ed. 169.

The motion to dismiss will be sustained.

# CONDITION OF WORLD SHIPPING

## Reduction in Laid Up Tonnage During the First Half of 1922 Is the Principal Change, Says a Department of Commerce Authority

THERE was a reduction in the amount of tonnage laid up in the first half of 1922, but otherwise no decisive change occurred in the shipping situation, which has been unsatisfactory since the latter part of 1920, according to a survey by E. S. Gregg, chief of the transportation division, Department of Commerce. There were few tendencies to account for this increased employment of ships either in the freight market or in the field of operating expenses. Charter rates continued to decline. The most favorable feature was the increase over the corresponding period of last year in the volume of overseas trade for the principal commercial countries.

### Tonnage Tied Up

More tonnage was employed at the end of June than at the first of the year, according to cabled reports from the field officers of the Department of Commerce and from other sources. Entirely comparable data for all maritime countries are not available, but the total tonnage tied up on July 1 was approximately 8,100,000 gross tons. On the whole, Scandinavian shipping shows the greatest percentage increase in employment, particularly Denmark, whose idle tonnage on January 1 amounted to 161,000 gross tons and on July 1 to 33,000 tons. Norwegian tonnage tied up declined in the same period from 207,000 gross tons to 112,000 tons, and Swedish from 204,466 tons to 114,000 tons, according to the Swedish Shipowners' Association, controlling about two-thirds of the Swedish merchant marine. The tendency of the freight market at the end of June was such, however, that there was talk of a renewal of the laying up of tonnage, particularly in Norway.

The tonnage of ships tied up in United Kingdom ports declined from 1,961,000 gross tons at the beginning of the year to 1,667,000 tons at the end of June. Idle tonnage in Japanese ports amounted to 120,000 gross tons on January 1 and 79,000 tons on June 15. The tonnage of French ships laid up was 1,200,000 gross tons on July 1 as compared with 1,085,337 tons on March 1. The tonnage laid up in Rotterdam and Amsterdam increased from 327,000 tons on January 15 to 330,000 tons on July 15, and that in Greek ports from 69,814 on October 1, 1921, to 100,425 on July 1, 1922. Italian shipping idle on July 1 totaled 585,336 tons; figures for the beginning of the year are not available.

Tonnage flying the American flag also showed more employment on July 1 than on January 1. Idle Shipping Board vessels declined from over 4,300,000 gross tons to 3,977,755 tons during the six months under review. Data for the privately owned American fleet are not available.

### Charter Rates Decline

Charter rates continued to decline in the first half of 1922 and are now at 121 per cent of the average for 1911-1913, according to a specially constructed index number.

Index Number of Ocean Charter Rates

| Year | |
|---|---|
| 1911-1913 average | 100 per cent |
| 1919 | 384 per cent |
| 1920 | 272 per cent |
| 1921 | 160 per cent |
| 1922 (first half) | 121 per cent |

Shortage of cargo has resulted in liners taking more and more of the business ordinarily handled by tramps. In the liner trades wars and rumors of wars have been of frequent occurrence during the past half year. It is unlikely that any improvement in the ocean rate situation will take place until the mass of laid-up tonnage that hangs over the market has been absorbed by an increased volume of international trade. Such data as are available indicate that some progress has been made in this respect during the first half of this year.

The average of the high and low rates mentioned above has been determined for the period of 1911-13 and for 1919, 1920, 1921, and the first half of 1922. The sum of the average rates for 1911-13 has been taken as 100 per cent and the sum of the average rates for each of the other periods has been reduced to percentages of the 1911-13 figure.

### Volume of Trade

It is not possible to determine accurately the increase or diminution in the volume of ocean borne trade, since some of the leading commercial nations do not publish their foreign trade statistics in terms of weight exclusively.

As far as the United States is concerned, there has been a decided increase in the volume of overseas shipments, the monthly tonnage of both imports and exports being appreciably larger at the end of the first half of the year than they were at the beginning. Combined exports and imports, excluding oil and Great Lakes cargoes, amounted to over 5,400,000 long tons in June, 1922, and as compared with only 3,200,000 long tons in June, 1921.

Figures for the volume of foreign trade of the United Kingdom for the same periods are not available. On the basis of value, however, taking into consideration changes in the level of wholesale prices, the volume of British foreign trade during the first six months of 1922 was somewhat larger than for the same period of 1921, as well as for the six months immediately preceding.

French imports and exports, in metric tons, showed an appreciable increase during the half year as compared with the corresponding months last year. German statistics, although not available for the first four months of 1921, indicate an increasing volume during 1922.

### Shipbuilding of the World

It is a commonplace that the shipbuilding industry is in a very depressed state. Allowing for suspension on work undertaken, the actual volume of construction under way at the beginning of July was below the pre-war level, and was more than 2,200,000 tons under the January 1, 1922, figures.

Figures giving the gross tonnage of ships contracted for at the end of 1921 and at the end of the first half of 1922 as reported by Lloyd's are shown below:

Gross Tons of Shipping Under Construction in the World

| | Dec. 31, 1921 | June 30, 1922 |
|---|---|---|
| United Kingdom | 3,708,916 | 1,919,504 |
| United States | 216,428 | 150,623 |
| Italy | 393,832 | 285,671 |
| France | 352,635 | 243,290 |
| Holland | 313,879 | 226,318 |
| Japan | 144,912 | 115,512 |
| All others | 395,088 | 384,512 |
| Total | 5,525,690 | 3,325,430 |

German shipbuilding is estimated on June 30, 1922, at 500,000 gross tons.

More indicative of the decline in shipbuilding than the amount of work under construction are the figures for work commenced as compared with launchings. During the first quarter of 1922 more than a half million gross tons of shipping were launched, while less than 120,000 tons were commenced. During the second quarter about 390,000 tons of shipping were launched, while new work aggregated only 150,000 tons. This means that during the first half of the year ways capable of accommodating approximately 650,000 tons of new ships became vacant.

### World Tonnage of Shipping

The world's merchant marine as of June 30, 1922, registered an increase of 2,396,133 tons over the amount recorded for the same date last year. Nearly half of this increase appears in the German fleet, which jumped from about 654,000 tons in 1921 to 1,783,000 tons in 1922. Taking steel, steam and motive ships as representing seagoing tonnage, the increase is still greater, amounting to approximately 2,644,000 tons.

The following table shows the steam merchant fleets of the principal maritime countries:

Gross Tons of Steel, Steam and Motor Vessels
Over 100 Gross Tons Each

| | June 30, 1914 | June 30, 1921 | June 30, 1922 |
|---|---|---|---|
| United Kingdom | 18,877,000 | 19,288,000 | 19,053,000 |
| British Dominions | 1,407,000 | 1,950,000 | 2,201,000 |
| United States | 1,837,000 | 12,314,000 | 12,506,000 |
| France | 1,918,000 | 3,045,000 | 3,303,000 |
| Germany | 5,098,000 | 654,000 | 1,783,000 |
| Holland | 1,471,000 | 2,207,000 | 2,613,000 |
| Italy | 1,428,000 | 2,378,000 | 2,600,000 |
| Japan | 1,642,000 | 3,063,000 | 3,325,000 |
| Norway | 1,923,000 | 2,285,000 | 2,237,000 |
| Other countries | 6,913,000 | 6,973,000 | 7,181,000 |
| Total | 42,514,000 | 54,158,000 | 56,802,000 |

### Ship Sales

The sales price of ships stiffened slightly in the first half of 1922. The average price of 12 cargo ships of from 5000 to 10,000 deadweight tons, not over five years old, sold during the last half of 1921 was £6 18s. 5d. a deadweight ton, as compared with the average of £7 19s. for 12 similar ships sold during the first half of 1922. Although the number of ships used as a basis for the average is not large, it includes the majority of the ships of that class reported sold during the periods specified.

# THE LEVIATHAN'S RECONDITIONING

ADMIRAL W. S. BENSON, Commissioner of the Shipping Board, has made public a report of his recent inspection of the Leviathan, which is being reconditioned by the Newport News Shipbuilding & Drydock Company. The report is as follows:

"On Friday, August 25, I made a careful inspection of the steamship Leviathan, now being reconditioned at the works of the Newport News Shipbuilding & Drydock Company, Newport News, Virginia. I inspected the ship throughout, including the work that was going on on the various decks, and also the equipment of the vessel in every part, the work already done and the plans outlined for its completion.

"I have been inspecting ships and ship construction, repair and equipment at various plants throughout the country from time to time during the past thirty years, and I cannot say too much in praise of the splendid way in which the work is organized on board this vessel, and the splendid spirit of industry, intelligence and efficiency that is being shown by every one engaged on this work. There were 2900 men employed, and work was going on literally all over the ship, yet at no time did I observe any one loafing, and efficient and rapid work was being carried on everywhere. I cannot say too much for the splendid organization and the efficient way in which this plant is carrying on its work on board the Leviathan.

"The work that has already been done has been done in a most excellent manner, indicating efficiency of a high order. The changes in the fittings and rearrangement of internal structure of the ship will make her a much safer and better vessel in every way. All the old equipment remaining on board is being carefully taken apart and thoroughly overhauled, and wherever necessary new material is being put in place. All new equipment is of the very latest type and of the very best material. The new arrangement will increase the stability of the ship. The number of water-tight doors wlll be decreased by at least 50 per cent, and those remaining will be so arranged as to enable the ship, when desirable, to run with all water-tight doors below the water line closed without any inconvenience.

"Fire-proof partitions are being put into the ship every 133 feet, making it possible to confine a fire to the space between these partitions. Every possible provision is being made for the safety and comfort of the passengers, and it can be safely stated that when the ship is ready for service, every possible convenience will be provided for the passengers, and in such a way that the equipment will work efficiently, insuring a total absence of the usual annoyances that come from faulty equipment, piping, etc.

"The ship is being completely re-wired with Navy standard wiring, rendering fires or mishaps from imperfect insulation practically impossible. The equipping of boilers for burning oil will eliminate the usual discomfort from smoke and cinders incident to the use of coal, and also enable the ship to be kept in a much more cleanly condition.

"All bulkheads below the water line have been materially strengthened, and, as stated above, everything possible has been done to insure the safety of the ship in case of either collision or grounding. I venture to state that when ready for service she will be by far the finest vessel afloat of her class and type, and as nearly perfect as it is possible to have a vessel of her size and type.

"I cannot be too emphatic in my statements in regard to the splendid work that is being done on this ship by the Newport News Shipbuilding & Drydock Company, and the splendid spirit they are showing in carrying on this work.

"This work has been very materially aided by the excellent organization gotten together by the Gibbs Brothers, who furnished the necessary plans. Gibbs Brothers have an excellent organization, every man of which is personally interested in the success of the work."

# MARINE INSURANCE

**CHARLES F. HOWELL, Eastern Contributing Editor**
**J. E. SHERBURNE, Western Contributing Editor**

## On the Atlantic

### Frozen Meat Coverage

Recent interesting concessions have been made by British marine underwriters in the matter of extended time in the insurance of chilled and frozen meats prior to shipment on the ocean-going steamer. Until a comparatively recent period the British government had been in control of the frozen meat trade from New Zealand. It has now come on the marine insurance market and London underwriters are concluding that the designers of the A1 clauses must have had dependable data at hand when they inserted the warranty that the period between the commencement of the risk and shipment on the ocean-going steamer should not exceed sixty days. This warranty has been regularly modified in clauses generally in use by the concession that further periods in store, but not exceeding 120 days in all, will be held covered at an additional premium of 2s. 6d. per cent for each thirty days beyond the first sixty. Even this, however, has failed to satisfy some shippers, who have persuaded their underwriters to delete the words "not exceeding 120 days", so that any period in store prior to shipment can be covered by payment of the additional premium of 2s. 6d. per cent for each thirty days.

Commenting on this arrangement Fairplay observes: "On the face of it, such an arrangement does not appear to be sound unless the experts are perfectly satisfied that delay in store prior to shipment does not cause any deterioration or make the meat more susceptible to damage in transit. Judging by the claims now coming forward, it would be difficult to substantiate such an assertion. Leaving out of consideration all losses where there has been some sudden accident between the inception and the termination of the risk, the allowances for damage to consignments which have been in store for less than 120 days are very moderate. On the other hand, there have been claims heavy enough to attract serious attention, and in almost every case the freezing works certificates show that the interest has been in store prior to shipment for varying periods of between six and twelve months. It would appear, therefore, that the additional premium at the fixed rate of 2s. 6d. per cent per period is not commensurate with the risk on consignments which have been stored longer than 120 days, and, if the old shipments continue to bring heavy claims, it may be necessary to consider charging additional premiums on a sliding scale."

All of this revives interest in one of the most hazardous risks known to cargo underwriting. It is of especial significance in that the London market has for years controlled the insurance of these commodities, and because no less than a score of different clauses have been promulgated for application to this coverage by the London Institute. When insured subject to average and to loss occasioned by the breakdown of the refrigerating apparatus, fresh and frozen meats become a source of serious anxiety to their insurers. Dressed meats are generally shipped either chilled or frozen. A temperature of about 40 degrees is maintained for chilled meats, and approximately 28 degrees for frozen. Spoilage, in event of a breakdown in the refrigerating plant, is much more rapid with frozen meat than with the chilled. Beef is usually shipped chilled, while smaller pieces, like mutton, rabbits, poultry, etc., go frozen. The hazard is increased by the assumption of the risk from the moment the meat is taken into the cooling or freezing chambers of the packing plant, and continues while under transportation and for a period not in excess of sixty days after arrival at destination. Usually sixty days prior to shipment on the ocean-going steamer is allowed in the risk. The seriousness of the insurance undertaking may be conceived when it it is considered that a commodity so peculiarly susceptible to decay and damage has often to be conveyed five or ten thousand miles over seas and frequently in the hottest portions of the oceans.

### Writing Rubber

From an underwriter' standpoint, rubber is one of the most desirable risks in the entire realm of cargo insurance. It is written under a very broad form of coverage and at extremely low rates. Rubber may be divided into two main classes, determined by the method of its preparation for market. The Brazilian product is not, as a rule, plantation rubber, but is crudely secured and roughly prepared and is dirty and not refined. The best grade of plantation rubber comes from the Straits Settlements; it is partially refined and comes in sheets instead of chunks. It is, however, much more susceptible to pilferage than the inferior grades because of its cleanness and from the fact that it is rolled into sheets.

In the days immediately following the war, when rubber reached a very high level, cases were frequently broken into and workmen on the steamship piers would carry it off by wrapping the sheets around their bodies and under their clothes. But at the present time, with rubber at 16 cents a pound, and greater care being exercised by the steamship authorities, there is not the same opportunity or incentive to theft.

Surveyors differ in opinion as to the susceptibility of rubber to damage by sea water. It is generally felt, however, that rubber is not damaged by contact with salt water but that frequently a certain amount of reconditioning is made necessary on account of its becoming spotted. Fire has a tendency to destroy the life of rubber, but only when the rubber is actually in contact with fire or in close proximity.

From the underwriting standpoint the principal question that has arisen in connection with rubber coverage is that of mold. As originally written, most rubber policies covered against all risks, and when the commodity was selling around 50 cents a pound and manufacturers were unable to get a sufficient supply to meet the demands of the trade, the question of mold was not raised, the manufacturers being so anxious to secure the raw material as to take care of any necessary reconditioning. But when the market became overstocked and the price fell to 12 cents a pound, importers began seeking every opportunity of unloading on the underwriters, and any indication of damage was a signal for a prompt claim. It was then that the question of the interpretation of the all risk clause became very important. Serious mold damages were claimed from the underwriters as one of the insured perils. Labor costs had fallen but little, with the result that the reconditioning charge of 3 cents a pound, which had seemed relatively unimportant to the buyers of rubber when the commodity

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was in great demand at 50 cents, became highly important with rubber a drug on the market at 12 cents.

From the underwriters' point of view a reconditioning cost of 3 cents a pound on an insured value of 12 cents a pound meant a particular average loss of 25 per cent. To such proportions did this question of mold damage grow that the underwriters sent a representative to the Far East to examine into the cause of the damage. The report so derived placed the responsibility for the condition of the rubber on the shippers, asserting that the rubber was packed in a wet condition and that the mold did not arise from a risk of transportation. This provision was sustained. Those underwriters who were not satisfied with the coverage granted their clients by the all risks clause, and who specifically included mold damage, had to pay the fiddler. The severe lesson sustained by many underwriters has caused a slight reaction in the opinion existing as to the desirability of this commodity as an insurable risk; but it is still being written at preferred rates, although in many cases only on a straight average basis instead of all risks.

## More on River Plate Question

In our last issue we discussed the controversy now raging anent the advisability of amending the River Plate clause, and to the views then presented may now be added certain others derived from numerous interviews with prominent Eastern underwriters on this important subject. It appears that there is a striking unanimity of opinion among underwriters in opposition to any modification of the clause as now written. Nevertheless there is something to be said on the side of the shippers, bankers and consignees, who apparently have been laboring under a misapprehension with regard to the operation of this clause.

In the first place, inasmuch as the underwriters by the terms of the clause now cover for ten days after landing, which means ten days on lighters or on the open wharf, it seems somewhat inconsistent for them to terminate this insurance within the ten-day period if the goods are placed under cover. In other words, if the goods on the second day after landing are placed in transit or customs sheds the insurance immediately terminates, whereas if they are left out on an uncovered wharf for ten days the insurance is continued in force during the entire ten-day period. At all ports other than those of the River Plate the goods are held during ordinary course of transit while in transit sheds awaiting customs examinations or while passing through customs, and although we do not favor the waiving of the present ten-day limitation at the River Plate, yet we do think that the clause should be extended so that the insurance would continue in force for the full ten-day period, even though the goods are placed in a transit or customs shed prior to the expiration of that period.

There is no discounting the serious losses incurred by underwriters in years gone by as a result of congestion at the Plate, and we should hesitate to advocate a measure that would be in any manner conducive to a return of such conditions. If the underwriters, acting in concert, agreed on the modification proposed and refused any further concession, we believe that not alone would the merchants and bankers be satisfied but that the underwriters would not thereby subject the clause to general attack.

In the judgment of many underwriters the clause has operated thus far to the satisfaction of all concerned and there is now no need for alteration, but we think that it is quite generally admitted that the security of the parties has been due to ignorance of the true meaning of the clause rather than to a satisfaction with its terms. The fact that during the years of its use no casualty has occurred to awaken the parties to a sense of their position is fairly good evidence that the proposed amendment, if granted, would not work a great hardship on the underwriters. The law of Argentine requiring that the goods be passed through the custons within eight days in order to avoid tax indicates a praiseworthy disposition on the part of the authorities to prevent congestion and serves as an incentive to secure prompt delivery of goods.

In addition to the merits of the case a motive for granting this concession would seem to exist in the steady increase in the number of River Plate merchants who are taking out open policies covering their imports. In event of the underwriters resolving to stand firm in their opposition to meeting the wishes of the banks and Argentine buyers, there is every reason to believe that this tendency of effecting their own insurance will increase to the great detriment of American underwriters.

## Greek Draft Payments

Frequent queries have been made within recent months by shippers to Greece regarding a comparatively new law that makes it necessary for Greek merchants to secure the assent of a commission, appointed for the purpose, prior to purchasing exchange for the payment of drafts. Shippers fear that conditions may arise to cause delay in the granting of the required assent for the purchase of exchange, and in the meantime the goods will be thrown into

INSURANCE COMPANY
Freights and Disbursements
STREETS, SAN FRANCISCO, CALIFORNIA

W. H. WOODRUFF, Manager, Southern California Marine Branch
740 SOUTH BROADWAY
LOS ANGELES

CHARLES R. PAGE, Manager
ATLANTIC MARINE DEPARTMENT
72 BEAVER STREET NEW YORK

309 COLMAN BUILDING, SEATTLE, WASHINGTON

public stores unprotected by insurance, with a resultant refusal by the purchasers to pay for the goods if destroyed while held in warehouse. This is a difficult situation for underwriters in this country to face, inasmuch as they are unfamiliar with the hazards surrounding the public stores, and if the goods are held for indefinite periods a serious accumulation might occur, which underwriters without full particulars of the risks involved would not care to assume. This would seem to be a situation that should be handled either by methods of finance not involving purchases of exchange in Greece or by local agents of the seller rather than by American underwriters, and represents an entirely different proposition from that of the River Plate situation where the goods are still in transit.

## Lightning a Marine Peril?

In view of rather more than the usual small run of marine casualties as a result of lightning, considerable interest is being taken in the frequent query: "Is lightning a marine peril?" There is a lamentably meager consideration of this question in the standard textbooks on marine insurance. It is an accepted dictum that lightning followed by fire falls within the terms of the policy, inasmuch as fire is always covered specifically. But is lightning per se a peril of the sea? It appears never to have been directly passed upon or involved in any modern cases. In his notable book William Winter observes: "A loss caused by action of lightning is a peril of the sea, lightning being distinguished from fire in that loss may be occasioned by the action of lightning without any fire resulting." In various court decisions diverse views have been expressed, so that it still remains an open question so far as the law is concerned. A few days ago Ernest Stavey, secretary of the New York Boat Owners' Association, applied to a prominent firm of admiralty lawyers for an opinion on the subject and received the cautious advice: "In order to be on the safe side, have a rider attached to policies making a special reference to the inclusion or exclusion of loss by lightning." Perhaps, after all, that is the best way out.

## Changes in Eastern Offices

Osborn, Slosson & Smyth have discontinued the insurance brokerage and average adjusting business that they recently consolidated under this name. Osborn & Company will continue in their name as formerly, with offices at 45 Wall Street, and Slosson & Smyth will carry on their old business under their old style at 80 Maiden Lane. The western business of Slosson & Smyth is to be continued through the Chicago office of Osborn & Company. As previously announced in these columns, the consolidation was effected June 1.

William J. Mitchell, one of the best known marine insurance men of Boston, died recently. He had been connected with the marine department of Field & Cowles for more than forty years.

The Hartwig, Moss Insurance Agency has been appointed marine agents of the North British & Mercantile for Louisiana.

The following committee has been appointed by Chairman William H. McGee to carry forward the work of inquiring into the liability of the United States government for war damages: Curtis L. Clay, Philadelphia, representative of the Insurance Company of North America; W. H. Jones, of S. D. McComb & Company; H. E. Reed, of the Fireman's Fund; H. A. Warden, of the Automobile; and G. B. Ogden, of Chubb & Son.

Incorporation papers have been filed for the Cotton Marine Insurance Company of Philadelphia; capital, $200,000; surplus, $100,000. Mather & Company are behind it. It will write inland and ocean marine transportation cover on cotton cargoes in transit only.

George H. Smith & Hicks, New York, have been appointed by the Aetna as representatives of its inland and coastwise marine department.

C. A. Mayo has joined the New York staff of the Aetna companies as inland marine underwriter.

J. Valensi succeeds S. Schnasi as president of the Importers & Exporters, and his brother, A. Valensi, is advanced from treasurer to first vice president and treasurer. The Valensis have acquired the Schnasi stock and now control the company. Other officers have been retained as before.

The Hansa, of Stockholm, may enter this country.

E. J. F. Coleman, formerly with W. H. McGee & Company, has joined the New York staff of the Automobile as a marine underwriter.

Spier & West is the name of a new firm, composed of Jesse Spier and Converse D. West, president and vice-president, respectively, of the Trans-Marine Underwriting Agency that has done the marine underwriting for the Importers & Exporters. They will remain with the latter, but have also been appointed general marine agents of the North River, which is now going into ocean marine writing on an extensive scale.

Hawley T. Chester, of Platt, Fuller & Company, is in Europe on a three months' trip in the interests of the Insurance Company of North America.

C. F. H.

# On the Pacific

## Adjustment Committee Rules

At a recent meeting of the adjustment committee of the Board of Marine Underwriters of San Francisco the following rules were adopted:

### Resolution No. 1

On vessels bound from the United States to ports and places as below:

(a) West Coast of Mexico, Central America and/or South America.

(b) Philippine Islands.

(c) St. Thomas.

General averages shall be adjusted according to the law and usage of the port of New York (except in so far as the contract of affreightment provides otherwise).

### Resolution No. 2

On vessels bound from the United States to foreign ports, Philippine Islands or St. Thomas, when the contract of affreightment provides for the adjustment in accordance with the law of the United States, general averages shall be adjusted according to the law and usage of the port of New York (except in so far as the contract of affreightment provides otherwise).

### Resolution No. 3

A—When the market value at destination of a shipment is not ascertainable, or is only ascertainable at an unreasonable cost or delay, the net sound arrived value for general average purposes shall be "invoice cost" to the consignee, plus 10 per cent, then plus prepaid and/or guaranteed freight:

Except that, as to machinery or materials consigned to one not a dealer and which have only a nominal value except to the consignee, 10 per cent shall not be added.

If the invoice is not "F. O. B. the vessel" it shall be compensated to put it upon that basis, except that charges which contribute to nominee shall not be included therein.

B—Unless underwriters (or others interested) shall make claim to the adjusters for some other valuation, in the trades specified below, the adjusters shall use "invoice cost", etc. (as per paragraph A), as the net arrived value for general average purposes.

Trades: (1) Intercoastal (between United States Atlantic and/or Gulf, and United States Pacific and/or British Columbia); (2) Alaska, United States Pacific to; (3) Hawaiian Islands, United States and/or British Columbia to; (4) West Coast (of Mexico and/or Central and/or South America), United States Pacific and /or British Columbia.

C—Unless underwriters (or others interested) shall make claim to the adjusters for some other valuation, in the trades specified below, the adjusters shall use "invoice cost", etc. (as per paragraph A), as the net arrived value for general average purposes, except that the 10 per cent shall never be added.

Trades: Coastwise (U. S. Pacific and/or B. C.), excluding Alaska and Hawaiian Islands.

## More Uniformity Attained

It will be seen from Resolutions 1 and 2 more uniformity will be had in the manner in which adjustments are prepared. The usual bills of lading provide that general average shall be according to the law of the port of destination. Quite frequently certain points are not covered. It is in these cases that the adjusters will avail themselves of the privileges made in these rules. They will also eliminate any difference of opinion that might arise regarding which law shall apply.

In the past adjusters have experienced much delay and difficulty in obtaining the values of cargo for average purposes. This delay has been mostly with consignees in Mexican, Central and South American ports. Through ignorance or indifference the consignees in these ports seemed very reluctant to supply the desired information. The third resolution undoubtedly will eliminate a great deal of extra work.

## A Havana Echo

In keeping with the foregoing an interesting case has arisen regarding contributory value of cargo. On a recent shipment of rice to Havana the carrying steamer encountered difficulties and a general average was declared. The laws of Havana do not permit the use of a custom's lien and the adjusters were not able to obtain a deposit or bond prior to the delivery of the cargo. The consignees now refuse to supply the adjusters with the sound arrival market value. As this cargo, as well as many others, was left on lighters in Havana harbor for considerable time, due to the congested condition of the docks at the time of arrival, it was several months after shipment was made that the cargo was delivered. During this time the market value decline was very great. It has been suggested that the insured value be used as the contributory value. Although there is some liability on the underwriters it seems that the insured value is far too great in this case. Such cases as this are unusual due to the fall in prices, and no set rule could be made to govern all. A compromised amount will probably be used as the contributory value.

## Broad Coverages

Underwriters insuring the imported Japanese lumber, such as birch and oak, have had very poor results. Insurance against all risks of splitting and breakage howsoever caused is usually required. Although these shipments are loaded under the supervision of Lloyd's surveyors and certificates are issued as to the quality and condition of the lumber, the claims for breakage and splitting have been numerous and heavy. Whether or not this loss is due to improper storage, careless handling or from the lumber becoming wet and drying out is not known, but as the usual bills of lading issued on these shipments contain clauses to the effect that the carrier is not to be held liable for breakage and/or splitting, it is believed that much could be done to reduce these losses through the exercise of more care in loading and discharging.

The opposite results have been met with the importation of raw hides from South America. These shipments are usually insured against loss and/or damage from any cause whatsoever provided such loss and/or damage amounts to $100. Although until just recently the insurance on this class has been placed in New York we understand that the claims have been very small, in fact not amounting to a franchise under the policy.

J. E. S.

## Arakan Libel Suit

On July 17, under an opinion handed down by Federal Judge Maurice T. Dooling of San Francisco, Dan J. Hanlon was awarded judgment against the steamer Arakan for $38,578.56 and costs. The Arakan, it will be remembered, was inbound from Java and went ashore in a fog in August, 1920. Following the refusal of the owners of the vessel to meet Hanlon's price for work performed by the Homer, Hanlon filed a libel against the Arakan for $250,000.

Judge Dooling, in his opinion, pointed out that the value of the Arakan's cargo when she went ashore was $1,433,000. He stated further that the amount Hanlon was entitled to was hard to estimate, the Homer having been sent to the aid of the distressed vessel without any stipulation having been made as to compensation. The crew of the Homer, Judge Dooling ruled, were not entitled to any extra pay in addition to their regular wages. The value of the steamer Homer, at the time she went to the aid of the Arakan, was $150,000, and because the salvage steamer left at night and under unfavorable weather conditions, Judge Dooling decided that Hanlon should be rewarded.

Hanlon stated that the cost of sending the Homer to the aid of the Arakan was $8578.56 and the award reimburses him for this amount plus $30,000 for services rendered.

The suit, filed last November, was bitterly contested, and has been the subject of much argument among marine underwriters, many of whom held highly diversified opinions as to the quality of the service rendered by the Homer. The "I told you so's" and the "What did I tell you's" have now had their innings, but the consensus of opinion is rather aptly portrayed by the following gem:

"He aimed at the moon
And missed it by far,
But by shooting thus high
He brought down a star."

## Ship Repairers' Liability

Marine repair plants along the Atlantic Coast are soon to make effective a new clause to bids for Shipping Board work limiting their liability for the safety of a vessel while undergoing repairs, says the bulletin of the Atlantic Coast Shipbuilders' Association. The approval of the measure by many companies in most of the principal ports indicates that the repair plants are practically a unit in favoring the early adoption of the new rule and it is expected that all yards doing repair work for the Shipping Board will observe same as soon as a date is determined upon for it to become effective. The present clause in Shipping Board specifications which private repair yards object to reads as follows:

"While the vessel is undergoing repairs or alterations at the contractor's yard or wharf, the contractor shall be held responsible for and make good at his expense any and all damages of whatsoever nature or/and loss to the vessel, and/or its equipment or/and its movable stores, except where contractor can affirmatively show that such loss or damage is due to causes beyond contractor's control and which by the exercise of reasonable care he was unable to prevent."

The ship repair yards consider this provision unreasonable, as it imposes upon them liabilities which they believe they are not justified in assuming and which are contrary to the well established principles of law. In the event that a vessel sustains an injury while being repaired in a contractor's yard this clause of the specifications imposes upon the contractor, in an action by the owner to recover damages for such injury, the burden of proving the person who caused the accident, from whatever cause it may have arisen and irrespective of the ship repairer's actual responsibility therefor, in order to show that the accident was due to causes beyond his control and which by the exercise of reasonable care he could have prevented. The clause requires the ship repairer to prove a negative and reverses the well established rules governing the burden of proof in actions of this character. The insurance companies charge the ship repairers an extra premium because of this clause. The substitute clause recommended by the repair yard is as follows:

"While the vessel is undergoing repairs or alterations at the contractor's yard or wharf, he shall be held responsible for and make good at his expense any and all damages of whatsoever nature and/or loss to the vessel, except demurrage, or/and its equipment or/and its movable stores, which is due to causes within his control, and which by the exercise of reasonable care he could have prevented."

The substitute clause has been formally adopted by the New York & New Jersey Drydock Association, comprising ship repair yards in the port of New York, and the Ironmasters' Association of Norfolk, composed of the principal marine repair plants in Norfolk and Portsmouth, Virginia. Similar action is expected by the New England Ship Repair & Drydock Association, which takes in most of the big repair yards in the port of Boston, and approval has also been obtained from individual concerns in the Delaware River section and the port of Baltimore. When all of the companies interested have approved the substitute clause it is proposed that a definite date be arranged on which same will be made effective and thereafter attached to all Shipping Board work.

## Columbia River Depths

The report of the United States Engineers, who recently made a survey of the entrance of the Columbia River, marks the city of Astoria as having one of the most remarkable harbor entrances in the world. The report of the engineers shows that a depth of 43 feet of water at mean low water exists over a channel width of 2000 feet. Over an additional width of 5200 feet 42 feet is available at zero tide, while 40 feet of water lies over 1600 feet more of channel width.

Not only is the entrance of the Columbia River remarkable in the eyes of engineers and mariners because of its depth, but also because of the progressive manner in which this depth has been attained and is increasing. In 1900 the Columbia River had an entrance depth of only 23 feet. In five years this had increased only six inches to 23.5 feet. In 1910 the depth was 26 feet. Between this date and 1915 came the first big increase, and the depth in the latter year was 30.5 feet. In five more years it had jumped to 41 feet in 1920. In 1921 the survey showed 42 feet and this year the soundings revealed 43 feet of water.

The engineers declare that the jetties erected by the Federal government at the entrance to the river and the work of the dredge Chinook have set up currents that are doing their own dredging and that the river indicates that it will continue deepening its channel, now that a level has been reached at which the currents can become effective.

The south jetty at the entrance to the river was completed in 1913 and the north jetty four years later. The Chinook stopped dredging in 1918. The deepening work started by these agencies has since been carried on exclusively by nature and it is predicted by engineers that the river will eventually deepen its entrances until there is 50 feet of water at mean low tide.

## Trade Brevities

Announcement has been made by the Schaeffer & Budenberg Manufacturing Company, Brooklyn, New York, that it has acquired the business and good will of the American Steam Gauge & Valve Manufacturing Company of Boston, Massachusetts, and will operate it as a division of its own business with headquarters and sales department at 338 Berry street, Brooklyn. No radical changes are to be made in executive or factory personnel, and the two companies, while operating as one, will continue to manufacture at their respective plants.

* * *

The Siebel Institute of Technology, Chicago, is offering a three months' course in refrigeration engineering. This is an intensive course, as only the most essential subjects are given, all of the numerous other studies taught by state universities and colleges and requiring two to four years to complete having been eliminated.

# AMERICAN SHIPBUILDING

## A Survey of Current Activity, Including Work in Prospect, Recent Contracts, Yard Notes, Progress of Construction and Repairs of the Month

### Work in Prospect

The American Shipbuilding Company has received a provisional contract from the Detroit & Cleveland Navigation Company for the building of two passenger steamers. According to the plans, each vessel will be 535 feet long and a little over 100 feet wide, will have 600 staterooms, and cost approximately $3,000,000. Work is not to be begun, however, until after a revision of the Seamen's Act by Congress.

The Minnesota - Atlantic Transit Company, Duluth, Minnesota, is planning to build two diesel-electric ships, each of about 2000 tons on barge canal draft and fitted with refrigerated cargo holds of about 800 tons capacity for the handling of dairy products and perishable goods other than meats. They will be the first of a line of cargo vessels which the company is planning to operate from the head of the Great Lakes through the Welland Canal, Lake Ontario and the New York State Barge Canal, via Oswego, to the seaboard and coastwise.

It is reported that the Clyde Line will built two coastwise passenger and freight ships. It is expected that bids will be called for early in the fall by Theodore Ferris, who is preparing the plans and specifications.

Bids will shortly be called for on the reconditioning of the steamer Tipton, recently purchased from the Shipping Board by the Baltimore & Carolina Steamship Company. The ship is to be changed to accommodate 200, including third-class passengers.

The Philadelphia & Wilmington Steamship Company have asked for bids on the construction of an excursion steamer 219 feet long, with accommodations for 3000 passengers, to cost approximately $200,000.

Other prospects for new work are: the construction of one and perhaps two 6000-barrel steel oil tank barges for the Tidewater Oil Company; a diesel-driven tug for the McAllister Towing & Transportation Company of New York; the conversion of six or eight ships from steam to diesel propulsion. A plan for the purchase of these vessels from the Shipping Board is said to be now under consideration by a New York concern.

### Recent Contracts

**The American Shipbuilding Company,** Cleveland, Ohio, 600-foot bulk freight steamer for the Interlake Steamship Company, Pickands, Mather & Company, managers, delivery 1923.

**The Murnan Ship Building Company,** Mobile, Alabama, vessel for the Adams Boat Line of Sarasota, Florida, for operation on the Tampa-Manatee River run, estimated delivery November 1, 1922.

**The Johnson Iron Works, Drydock & Shipbuilding Company,** New Orleans, Louisiana, steel dipper dredge hull for the United States Engineering Office, Montgomery, Alabama, $25,850; also two steel quarter boat hulls for the United States Engineering Office, Nashville, Tennessee, $7160.

**Sun Shipbuilding Company,** Chester, Pennsylvania, four steel diesel-electric seagoing dredges, each 267 feet long, for the United States Government.

**The Pusey & Jones Company,** Wilmington, Delaware, floating grain elevator for the Pennsylvania Railroad; 100 feet long, 30 feet beam, 13 feet deep, tower 80 feet above deck.

**The Pusey & Jones Company,** Wilmington, Delaware, two steel screw day passenger steamers for the Wilmington Steamboat Company (Wilson Line); 219 feet long, 59 broad and 13 feet 9 inches deep (molded); speed of 18 miles; powered with 4-cylinder triple-expansion engines and two Babcock & Wilcox watertube boilers.

**Bethlehem Shipbuilding Corporation, Harlan Plant,** Wilmington, Delaware, carfloat for the Baltimore & Ohio Railroad.

**American Bridge Company,** Pittsburgh, two sand barges for the Wilson Sand & Supply Company, Huntington, West Virginia, 135 feet long by 27 broad by 10 deep. Three decked barges for the Patton-Tully Transportation Company, Memphis, 160 feet long by 34 broad by 7 deep.

**New York Shipbuilding Corporation,** Camden, New Jersey, carfloat for the Brooklyn Eastern District Terminal, 340 feet long.

**The Newburgh Shipyards, Inc.,** Newburgh, New York, steel freighter for the Catskill Evening Line for operation between New York and Hudson River points, $94,153.

### Keel-Layings

Bay barge Shell Company of California, Union Construction Company, August.

Combination vessel Merchants & Miners Transportation Company, Federal Shipbuilding Company, July 24.

Steel drill boat War Department, Federal Shipbuilding Company, May 22.

Steel carfloat Long Island Railroad, Federal Shipbuilding Company, July 26. Another, August 5.

Ohio, yacht Cox & Stevens, Newport News Shipbuilding & Drydock Company, August 1.

Barge Rockland & Rockport Lime Corporation, New York Shipbuilding Corporation, August 3. Another, August 8.

Freighter Kinsman Transit Company, Toledo Shipbuilding Company, September 5.

Yacht Keith Spalding, Bethlehem Shipbuilding Corporation, Harlan plant, May 27.

### Launchings

Carfloat Lehigh Valley Railroad, Bethlehem Shipbuilding Corporation, Baltimore Drydock Plant, July 22.

Steelore, ore and oil carrier Ore Steamship Company, Bethlehem Shipbuilding Corporation, Sparrows Point Plant, August 15.

State of Maryland, combination steamer Seaboard Bay Line, Pusey & Jones Company, July 25.

Bulk freighter Mathews Steamship Company, Port Arthur Shipbuilding Company, August 12.

Catherine Cryer, pilot boat San Pedro Harbor, Seacraft Corporation, Mormon Island, California, July 31.

State of Virginia, combination steamship Seaboard Bay Line Company, Pusey & Jones Company, September 6.

N. H. Botsford, Lake freighter George Hall Coal Company of Canada, Fraser, Brace, Ltd., August 19.

### Deliveries

S-35, submarine U. S. N., Bethlehem Shipbuilding Corporation, Union Plant, August 17.

Francois Lake Ferry No. 2, ferry Provincial Government, Prince Rupert Drydock & Shipbuilding Company, August 25.

Yacht J. H. Reid, De Foe Boat & Motor Works, August 10.

Steel oil barge Gulf Refining Company, Federal Shipbuilding Company, May 6. Another, May 15.

Carfloat Brooklyn Eastern District

Terminal, New York Shipbuilding Corporation, August 2.

Destrehan, towboat Pan American Petroleum & Transport Company, Charles Ward Engineering Works, August 3.

Carfloat Lehigh Valley Railroad, Bethlehem Shipbuilding Corporation, Baltimore Drydock Plant, August 3.

Charles Dick, sand and gravel dredging steamship National Sand & Material Company, Collingwood Shipbuilding Company, August 2.

## Yard Notes

Captain W. G. Tibbitts of the Barnes & Tibbitts Shipbuilding & Drydock Company, Alameda, California, has purchased the Barnes interest in the concern. The plant specializes in work on wooden craft, both as to hull and machinery, and operates three marine railways, the largest having a capacity of 4000 tons. No change will be made in the firm name, at least for the present.

* * *

According to a recent statement of A. Miller McDougall of Duluth, president of the McDougall Terminal Warehouse Company, contracts for the building of the first two of a fleet of modern freighters will be let in time to have the ships ready at the opening of Lake navigation next spring. The vessels will be operated from Duluth down the Great Lakes and through the Erie canal to New York. Work has already started on the site of the new terminal warehouse, the cost of which is estimated at $1,750,000 and that of the vessels at $200,000 each.

* * *

The Bethlehem Shipbuilding Corporation was low bidder on the installation of a feed water heater, new feed pumps and new evaporators on the United States Army transport President Grant. The bids submitted were: Bethlehem Shipbuilding Corporation, $22,000; General Engineering Company, $32,000; Moore Shipbuilding Company, $23,800; Hanlon Drydock & Shipbuilding Company, $23,120. This work is preliminary to extensive reconditioning in the officers' and crew's quarters and numerous changes throughout the interior upper works of the vessel. Bids will be asked on this as soon as the transport department has prepared the specifications.

* * *

Three steel cargo carriers, purchased on the East Coast, are en route to Los Angeles harbor to form the nucleus of the fleet of steam lumber schooners that will carry the logs from the British Columbia timber properties of the Los Angeles Lumber Products Company to its lumber manufacturing plant now being rushed to completion on part of the site of the Los Angeles Shipbuilding & Drydock Corporation. Upon arrival they will be reconditioned by that shipyard, converted into oil burners, and have such other changes made as are necessary to make them the most modern of lumber carriers. Each will have a lumber carrying capacity of approximately 2,250,000 feet.

* * *

Two steamers, the Sachiko Maru, 1450 tons, and the Osaka Maru, 3707 tons, both built by the Yokohama Dockyard, and a 2000-ton steamer built by the Osaka Iron Works, a total gross tonnage of 7157, constituted the entire number of vessels over 1000 tons gross launched in Japan during June, 1922. This is an increase of 1950 tons over the corresponding month last year. During the first half of this year the number of ships completed in Japan aggregated 8 of 34,450 gross tons, a decrease of 19 vessels of 109,900 gross tons as against the same period last year.

* * *

The New York Harbor Drydock Corporation has completed arrangements for the installation of a second 10,000-ton dock at its plant in Rosebank, Staten Island, adjoining the twelve new piers just finished by the city of New York. The corporation will also construct another tying-up pier to provide additional berthing space required in connection with the second drydock.

* * *

Sections 465 and 466 of the Fordney Tariff Bill (H. R. 7456) as passed by the House of Representatives and now under consideration by the Senate offer protection to American ship repair plants and American manufacturers of marine equipment. They provide that the equipment or any part thereof, including boats purchased for, or the repair parts or materials to be used, or the expenses or repairs made in a foreign country upon a vessel documented under the laws of the United States to engage in foreign or coasting trade, or a vessel intended to be employed in such trade, shall on the first arrival of such vessel in any port of the United States, be liable to entry and the payment of an ad valorem duty of 50 per cent on the cost thereof in such foreign country. It is pointed out by those interested in the enactment of these provisions that such protection is necessary for American repair yards and manufacturers of marine equipment, which at present cannot meet foreign competition, particularly that of Germany and Japan, where low wages and long hours of employment reduce costs below those in this country.

* * *

The Baltimore & Carolina Steamship Company has given up the idea of building at the present time a combination passenger and freight steamer and has purchased the steamer Tipton from the Shipping Board, according to a recent bulletin of the Atlantic Coast Shipbuilders' Association. This ship is to be reconditioned to accommodate about 200 passengers, including provisions for a third-class cabin.

* * *

The Victoria (B. C.) Shipowners, Ltd., has been placed in bankruptcy by order of the Supreme Court through action taken by the Washington Bank of Alma. Details of the formation of the company were given in the August issue of Pacific Marine Review, as well as the status of its affairs at that time.

# Progress of Construction

## Atlantic, Lakes, Rivers

### AMERICAN BRIDGE COMPANY, PITTSBURGH, PENN.

Purchasing Agent: W. G. A. Millar.

Fifteen decked barges, 120 LBP; 30 beam; 7 deep; US Engineers, Memphis, Tenn.; 15 launched, 9 delivered.

Two carfloats, Long Island R R Co, 292x42x11-6; under construction at Federal Shipbuilding Co, Kearny, N. J.; launch Sept/22, est.

Ten sand barges, undisclosed interests; 135x27x10; launchings Oct-Nov-Dec/22, est.

Two sand barges, Wilson Sand & Supply Co, Huntington, W Va, 135 x27x10; launch Jan/23, est.

Three decked barges, Patton-Tully Transportation Co, Memphis, 160x34 x7; launch Dec/22, est.

### THE AMERICAN SHIP BUILDING CO., LORAIN, OHIO

Purchasing Agent: W. H. Gerhauser.

No name, hull 781, bulk freighter H. K. Oakes Company; 596 LBP; 64 beam; 21 loaded draft; 12 mi loaded speed; 13,000 DWT; TE engs, 2400 IHP; 3 Scotch boilers, 14x11, 185 WP; keel July/22, est; launch Oct/ 22, est; deliver Nov/22, est.

No name, hull 782, bulk freighter Pittsburgh Steamship Co; 580 LBP; 60 beam; 21 loaded draft; 12 mi loaded speed; 12,500 DWT; TE engs, 2300 IHP; 3 Scotch boilers, 13-6x11,

The S. S. Steelore, 20,500-ton turbine-driven freight vessel launched at the Sparrows Point Plant of the Bethlehem Shipbuilding Corporation, August 15. She is owned by the Ore Steamship Corporation of New York, and is the last of three vessels of this capacity and same general type to be built for this company at Sparrows Point. She is arranged for carrying iron ore and when completed will be put into service for the transportation of ore from South America to the United States. She is of the same size and similar in construction to the Bethore, the large combination ore-and-oil vessel recently delivered at Sparrows Point to the Ore Steamship Corporation, but will be propelled by two Curtis-type turbines with Falk single reduction gears instead of by reciprocating engines.

185 WP; keel July/22, est; launch Oct/22, est; deliver Nov/22,est.

No name, hull 783, bulk freighter Pittsburgh Steamship Co; sister to above; keel Dec/22, est; launch Mar/23, est; deliver May/23, est.

No name, hull 784, bulk freighter G A Tomlinson Co; sister to above; keel Dec/22, est; launch Mar/23, est; deliver May/23, est.

## BATH IRON WORKS, LTD., BATH, MAINE

Purchasing Agent: John L. P. Burke.

Light vessel 106, hull 87, second-class light vessel US Dept of Commerce, 109-6 LBP, 30 beam, 14-4 loaded draft, 9½ speed; comp eng, 400 IHP; 2 Scotch boilers, 10-6 x 11-4; keel Apr12/22; launch Oct/22, est; deliver Dec/22, est.

Light vessel 107, hull 88, sister to above; keel Apr14/22; launch Nov/22,est; deliver Jan/23, est.

Light vessel 108, hull 89, sister to above; keel May24/22; launch Jan/23, est; deliver Mar/23, est.

Light vessel 109, hull 90; sister to above; keel May31/22; launch Mar/23, est; deliver Apr/23, est.

Light vessel 110, hull 91, sister to above; keel prior to Nov1/22, est; launch May/23, est; deliver June/23, est.

## BETHLEHEM SHIPBUILD'G CORPORATION, BALTIMORE DRYDOCK PLANT, BALTIMORE

Fort McHenry, hull 125, tanker builder's account; 340 LBP; 49 beam; 23-6 loaded draft; 10½ loaded speed; 6050 DWT; rec eng, 2000 I HP; 2 Scotch boilers, 15-6; keel Nov24/20; launch Feb1/22.

Hull 129, carfloat Lehigh Valley R. R.; 270 LBP; 38 beam; 10-6 loaded draft; keel Apr26/22.

Hull 130, carfloat Lehigh Valley R. R.; 325 LBP; 38 beam; 10-6 loaded draft; keel Apr26/22; **launch July22/22.**

Hull 131, carfloat Lehigh Valley R. R.; 180 LBP; 36 beam; 9 loaded draft; keel June3/22.

## BETHLEHEM SHIPBUILDING CORP., FORE RIVER PLANT, QUINCY, MASS.

Lexington, hull 1300, battle-cruiser U S N.

Raleigh, hull 1382, scout cruiser U S N.

Detroit, hull 1383, scout cruiser U S N.

Massachusetts, hull 1400, battleship USN.

S-21, hull 1312, submarine U. S. N.
S-26, hull 1317, submarine U. S. N.
S-27, hull 1318, submarine U. S. N.
S-28, hull 1319, submarine U. S. N.
S-29, hull 1320, submarine U. S. N.
S-42, hull 1389, submarine U. S. N.
S-43, hull 1390, submarine U. S. N.
S-44, hull 1391, submarine U. S. N.
S-45, hull 1392, submarine U. S. N.
S-46, hull 1393, submarine U. S. N.
S-47, hull 1394, submarine U. S. N.

## BETHLEHEM SHIPBUILDING CORP., HARLAN PLANT, WILMINGTON, DEL.

Hull 3478, yacht Keith Spalding; 150 LBP; 30 beam; 15-3 deep; 360 DWT; two 6 cyl 180 HP Nelseco diesel engs.

Hull 3479, carfloat Bush Terminal.
Hull 3480, sister to above.
Hull 3481, sister to above.
Hull 3482, carfloat B. & O. R. R.

## BETHLEHEM SHIPBLDG. CORP., SPARROWS POINT PLANT, SPARROWS POINT, MD.

Steelore, hull 4213, ore and oil Ore SS Co; 550 LBP; 72 beam; 32-4 loaded draft; 11½ loaded speed; 20,000 DWT; turb eng, 4600 IHP; 3 Scotch boilers, 17-6x12; keel July 20/21; **launch Aug15/22.**

## COLLINGWOOD SHIPBUILDING CO., LTD., COLLINGWOOD, ONTARIO

Charles Dick, hull 71, National Sand & Material Company, Ltd., Welland, Ontario; 250 LBP; 43 beam; 16-6 loaded draft; 11 loaded speed; 2800 DWT; TE engs, 1400 IHP; 2 Scotch marine boilers, 14-7x10/8; keel Feb21/22; launch May 27/22; **deliver Aug2/22.**

## CONSOLIDATED SHIPBUILDING CORPORATION, MORRIS HEIGHTS, N. Y.

Purchasing Agent: Bruce Scrimgeour.

Zalophus, steel motor houseboat for John Ringling; 125 LOA; 21 beam; 4 draft; 12 speed; two 6-cyl 180 HP Nelseco diesel engs; keel Mar22/22; launch June24/22; deliver Sept1/22, est.

Steel motor cruiser for Charles Ringling; 120 LOA; 20 beam; 4 draft; 2 Speedway 6-cyl engs, 165 HP each; keel June30/22; deliver Oct15/22, est.

## WILLIAM CRAMP & SONS SHIP & ENGINE BUILDING CO., PHILADELPHIA

Purchasing Agent: Ed. C. Geehr.

Richmond, hull 448, scout cruiser U. S. N.; keel Feb16/20; launch Sept 29/21; 91.9 per cent comp Aug1/22.

Concord, hull 449, scout cruiser USN; keel Mar29/20; launch Dec 15/21; 86.5 per cent comp Aug1/22.

Trenton, hull 501, scout cruiser USN; keel Aug18/20; 55.7 per cent comp Aug1/22.

Marblehead, hull 502, scout cruiser USN; keel Aug4/20; 47.2 per cent comp Aug1/22.

Memphis, hull 503, scout cruiser USN; keel Oct14/20; 42.4 per cent comp Aug1/22.

## DEFOE BOAT & MOTOR WORKS, BAY CITY, MICH.

Windsor II, hull 60, yacht G. W.. Megeath; 98 LBP; 15 beam; 6 draft; 14 speed; Standard gas eng; keel June28/22; launch Sept30/22, est.

No name, hull 61, yacht builder's account; sister to above; keel June 28/22; launch Oct15/22, est.

Priscilla Dean, hull 63, wood yacht K. M. Devos; 65 LBP; 12½ beam; 4 draft; 22 speed; gas eng; keel Mar 10/22; launch Sept10/22, est; deliver Sept25/22, est.

No name, hull 64, wood yacht J. H. Reid; 42 LBP; 11 beam, 3½ draft; 11 speed; gas eng; keel Mar 30/22; launch July 25 / 22; **deliver Aug10/22.**

## FEDERAL SHIPBUILDING CO., KEARNY, N. J.

Purchasing Agent: J. L. Hastings.

Hull 68, freighter undisclosed interests; 425 LBP; 56 beam; 27 loaded draft; 11½ loaded speed; 10,025 DWT; Parsons turbines, 3100 SHP; 3 Scotch boilers, 15-3x11-3¾; keel Mar16/22; launch Sept/22, est.

Hulls 69-70, steel oil barges, Gulf Refining Company; 158 long; 37 beam; 11-6½ deep; **deliver May6 and May15/22.**

No name, hull 71, steel drill boat War Department, sub-contract from Dravo Contracting Company; 157 LBP; 52 beam; 12-9 deep; **keel May 22/22.**

No name, hull 72, coastwise passgr and frt Merchants & Miners Transportation Co; 350 LBP; 52 beam; 19 loaded draft; 12 loaded speed; TE engs, 2700 IHP; 4 SE Scotch boilers, 14-3x11; keel July 5/22; launch Nov15/22, est; deliver Jan15/23, est.

No name, hull 73, coastwise passgr and frt Merchants & Miners Transportation Co; sister to above; **keel July24/22**; launch Dec15/22, est; deliver Feb15/23, est.

Hull 74, steel car float, Long Island Railroad, 292 long; 43-8 beam; 11-6 deep; **keel July26/22**; deliver Sept21/22, est.

Hull 75, steel car float, Long Island Railroad; sister to above; **keel** Aug5/22; deliver Sept21/22, est.

## FRASER, BRACE, LIMITED, THREE RIVERS, QUEBEC

N. H. Botsford, hull 18, Lake freighter George Hall Coal Co. of Canada; 250 LBP; 43 beam; 16-6 loaded draft; 12 loaded speed; 3270 short tons DWT; TE eng, 1400 IHP, 19x32x56-36 stroke; 2 Scotch marine boilers, 14-7x10-8, coal burning; keel Feb/22; **launch Aug19/22**; deliver Sept/22, est.

Frank A. Augsbury, hull 19, Lake freighter George Hall Coal Co. of Canada; sister to above; launch Sept23/22, est; deliver Sept30/22, est.

Sister to above.

Sister to above.

## GREAT LAKES ENGINEERING WORKS, RIVER ROUGE, MICHIGAN

Purchasing Agent: H. O. Kretlow.

James MacNaughton, hull 242, bulk frt Wilson Tran Co, Cleveland; 580 LBP; 60 beam; 20 loaded draft; 11½ miles loaded speed; 11,800 gross, TE engs, 1880 IHP; 3 Scotch boilers, 13-6; keel May3/22; launch Sept1/22, est; deliver Oct1/22, est.

## JOHNSON IRON WORKS, D. D. & S. B. CO., NEW ORLEANS

Hull 163, steel oil barge, US Engrs, Mobile; 87 LBP; 28-4 beam; 7 loaded draft.

Hull 164, sister to above.

Hull 165, sister to above.

Hull 166, sister to above.

Hull 167, sister to above.

Hull 168, sister to above.

Hull 169, steel oil barge, Sou Paper Mills; 144 LBP; 32 beam; 8-6 loaded draft.

Hull 170, steel barge, Jno A Hunt Co; 48 LBP; 12 beam; 3-6 loaded draft.

Hull 171, sister to above.

Hull 172, quarter boat, US Engrs, Nashville; 60 LBP; 22 beam; 4 loaded draft.

Hull 173, sister to above.

Hull 174, fireboat, City of New Orleans; 138 LBP; 29 beam; 15-6 loaded draft; comp eng, 2 WT boilers.

Upatoi, hull 175, dredge, US Engrs, Montgomery; 100 LBP; 34 beam; 6-8 loaded draft.

## KYLE & PURDY, INC., CITY ISLAND, NEW YORK CITY

Purchasing Agent: T. A. Kyle.

No name, hull 154, steel ferryboat department of plants and structures, City of New York; 90 LBP; 30 beam; 6-8 loaded draft; 10 miles loaded speed; 100 DWT; comb eng, 200 I HP; Roberts tube boilers.

## LAKE TORPEDO BOAT CO., BRIDGEPORT, CONN.

Purchasing Agent: C. D. Maxfield.

S-48, hull 48, submarine USN; launch Feb26/21.

## NAVY YARD, BOSTON

Whitney, destroyer tender No. 4 USN; 460 LBP; 60-10⅛ molded beam; 21-0½ normal draft; 16 loaded speed; 10,600 normal disp; geared Parsons turbs, 7000 SHP; 2 WT exp boilers; keel Apr 23/21; launching indefinite.

## NAVY YARD, PHILADELPHIA

Dobbin, hull 7, destroyer tender USN; 460 LBP; 60-10 beam; 21 loaded draft; 16 loaded speed; 10,600 tons disp; Parsons geared turb single screw engs, 7000 SHP; 2 WT boilers; keel Dec23/19; launch May 5/21; deliver date not determined.

Constitution, hull 8, battle cruiser USN; 850 LBP; 105-4 beam; 30-11½ loaded draft; 33½ loaded speed; 43,500 disp; electric drive, 180,000SHP; 16 WT boilers; keel Sept25/20.

United States, hull 9, battle cruiser USN; 850 LBP; 105-4 beam; 30-11½ loaded draft; 33½ loaded speed; 43,500 disp; electric drive, 180,000 SHP; 16 WT boilers; keel Sept25/20.

## NEWPORT NEWS SHIPBUILDING & DRYDOCK COMPANY, NEWPORT NEWS

Purchasing Agent: James Plummer, 233 Broadway, New York City.

West Virginia, hull 211, battleship USN; 600 LBP; 97-3½ beam; 30-6 mean draft; 32,600 normal disp; 21 speed; GE turbo-elec drive, 28,900 SHP; 8 B&W WT boilers, oil, 41,768 sq ft plus 4168 superheat; keel Apr 12/20; launch Nov19/21.

Constellation, hull 215, battle-cruiser USN; 850 LBP; 101-8¼ beam; 31 mean draft; 43,500 normal disp; 33¼ speed, est; Westinghouse turbo-elec drive, 180,000 SHP; 16 WT boilers, oil, 198,000 sq ft plus 18,000 superheat; keel Aug18/20.

Ranger, hull 215, battle-cruiser USN; sister to above; keel June23/21.

Iowa, hull 258, battleship USN; 660 LBP; 105 beam; 33 mean draft; 43,200 normal disp; 23 speed; GE turbo-elec drive, 60,000 SHP; 12 White-Forster WT boilers, oil, 82,800 sq ft plus 8940 superheat; keel May17/20.

Ohio, hull 265, diesel yacht Cox & Stevens; 172 LOA; 26 beam; 15-6 deep; **keel Aug1 22**; launch Sept/22, est; deliver Nov/22, est.

## NEW YORK SHIPBUILDING CORPORATION, CAMDEN, N. J.

Purchasing Agent: L. G. Buckwalter.

Eurana, hull 264, bulk oil stock; 419-3 LBP; 56-3 beam; 25-9¼ loaded draft; 10¾ loaded speed; 9870 DWT; 3 cyl TE engs, 3000 SHP; 3 SE Scotch boilers, 15-10x11-4; keel Jan17/21; launch July16/21.

No name, hull 265, bulk oil stock; sister to above.

Saratoga, hull 199, battle cruiser USN; 874 LOA; 850 LBP; 105-5¼ extreme beam; 31 mean draft; 43,500 normal disp; 33¼ loaded speed; GE turbo-electric drive; 180,000 SHP; 16 WT boilers, 198,000 sq ft plus 18,000 superheat; keel Sept25/20.

Colorado, hull 200, battleship US N; 624 LOA; 600 LBP; 97-3½ beam waterline; 30-6 mean draft; 32,600 normal disp; 21 loaded speed; Westinghouse turbo-electric drive, 28,900 SHP; 8 B&W WT boilers, 41,678 sq ft plus 4169 superheat; keel Mar29/19; launch Mar22/21.

Washington, hull 201, battleship USN, sister to above; keel June30/19; launch Sept1/21.

Kamoi, hull 267, fuel ship Japanese Navy; 497-8 LOA; 67 beam; 28 designed draft; 15 loaded speed; 13,000 DWT; elec drive, 8000 SHP; 4 WT boilers; keel Sept14/21; launch June8/22.

Hull 269, carfloat Brooklyn Eastern District Terminal; 340 feet long; keel May4/22; **deliver Aug2 22.**

Hull 270, barge Rockland & Rockport Lime Corporation; length 196-10; keel June14/22.

Hull 271, sister to above; keel June19/22.

Hull 272, sister to above; **keel Aug3/22.**

Hull 273, sister to above; **keel Aug8/22.**

Hull 274; sister to above; keel not laid.

Hull 275, car float Brooklyn Eastern District Terminal; 340 feet long; keel not laid.

## PORT ARTHUR SHIPBUILDING CO., PORT ARTHUR, ONT.

Purchasing Agent: W. E. Decker.

Hull 47, single-deck bulk freighter Mathews Steamship Co; 530 LBP; 58 beam; 12 loaded speed; 10,000 DWT; 3-cyl TE engs, 25½-41-67x42, 2100 IHP; 3 Scotch boilers, 13-6;

keel May 10/22; **launch Aug12/22;** deliver Sept15/22, est.

### THE PUSEY & JONES COMPANY, WILMINGTON, DELAWARE

Vice-president and general manager: W. G. Coxe.

State of Maryland, hull 1021, comb str, bay or sound type, Seaboard Bay Line Co; 320 LBP; 42-6 beam on 10′ WL, 58 over guards; 14-6 mean draft; 18 miles speed; about 800 DWT; 4-cyl TE engs, 3000 IHP; 4 Scotch boilers, 13-3x11-6; keel Mar 7/22; **launch July25/22;** deliver Oct 15/22, est.

State of Virginia, hull 1020, comb str, bay or sound type, Seaboard Bay Line Co; sister to above; keel Mar 1/22; **launch Sept6/22;** deliver Nov 18/22, est.

No name, hull 1024, steel screw day passenger steamer Wilmington Steamboat Co. (Wilson Line); 219 LBP; 59 beam at deck; 13-9 molded depth; 18 miles speed; 4-cyl TE engs, 2 B&W WT boilers.

No name, hull 1025, steel screw day passenger steamer Wilmington Steamboat Co. (Wilson Line); sister to above.

Floating grain elevator with steel deckhouse and steel frame tower Pennsylvania RR, Philadelphia; 100 LOA; 30 molded beam; 13 deep; operating machinery and 1 Scotch boiler 10x12-7½, 125 WP.

### STATEN ISLAND SHIPBUILDING COMPANY, STATEN ISLAND, NEW YORK

Purchasing Agent: R. C. Miller.

No name, hull 740, ferryboat Erie R R Co; 206 LBP; 44-1 beam; 17-4 loaded draft; 1538 gross; rec engs, 1200 IHP; 2 Scotch boilers, 12-9x 12-9; keel Aug/22, est.

No name, hull 741, ferryboat City of New York; 215 LBP; 45 beam; 18 loaded draft; elec drive, 1900 IHP; 4 B&W WT boilers, 8000 sq ft HS; keel Aug/22, est.

No name, hull 742, ferryboat City of New York; sister to above; keel Aug/22, est.

No name, hull 743, ferryboat City of New York; sister to above; keel Aug/22, est.

Hull 744, Hudson River vehicular tunnel, erection, launching and delivery of river shaft, New York side; keel Aug/22, est.

Hull 745, Hudson River vehicular tunnel, erection, launching and delivery of river shaft No. 1, New Jersey side; keel Aug/22, est.

Hull 746, Hudson River vehicular tunnel, erection, launching and delivery of river shaft No. 2, New Jersey side; keel Aug/22, est.

### SUN SHIPBUILDING COMPANY, CHESTER, PENN.

Purchasing Agent: H. W. Scott.

Agwiscot, hull 42, tanker A. G. W. I. S. Co; 480 LBP; 65-9 beam; 26-7 loaded draft; 12 loaded speed; 12,500 DWT; single screw QE engs, 4300 IHP; 4 SE Scotch boilers, 15-10 x11-11¼; keel Dec23/20.

Passenger vessel Inter - Island Steam Navigation Co., Honolulu; 345 long; 46 beam; 32 deep; 16½ speed; 4-cyl TE engs, 5000 IHP; 4 B&W WT boilers; to carry 434 passengers; keel May16/22; launch Sept1/22, est; deliver Nov30/22, est.

### TEBO YACHT BASIN COMPANY, BROOKLYN, N. Y.

Purchasing Agent: R. C. Smith.

No name, hull 22, steel tugboat New York Central R. R.; 96 LBP; 25-6 beam; vert comp eng, 20x40-26; 1 Scotch boiler, 14-3x11-6; keel Aug 28-22, est; launch Oct28/22, est; deliver Jan1/23, est.

No name, hull 23, steel tugboat New York Central R. R.; sister to above; keel Sept28/22, est; launch Nov28/22, est; deliver Feb1/23, est.

No name, hull 24, steel tugboat New York Central R. R.; sister to above; keel Oct28/22, est; launch Dec28/22, est; deliver Mar1/23, est.

### THE TOLEDO SHIPBUILDING CO., TOLEDO, OHIO

Purchasing Agent: H. M. Ives.

No name, hull 174, cargo Kinsman Transit Co., Cleveland; 590 LBP; 60 beam; 20 loaded draft; 12 mi loaded speed; 12,000 DWT; TE eng, 2000 IHP; 3 Scotch boilers, 13-6; **keel Sept5/22;** launch Nov/22, est; deliver Apr15/23, est.

### THE CHARLES WARD ENGINEERING WORKS, CHARLESTON, WEST VIRGINIA

Purchasing Agent: E. T. Jones.

Gen'l Frank M. Coxe, hull 17, river str War Dept; 144 LBP; 28 beam; 9 loaded draft; 16 miles loaded speed; 175 DWT; TE eng, 1050 I HP; 2 Ward WT boilers, 2094 sq ft heating surface; keel July 16 / 21; launch Mar3/22; deliver Nov1/22, est.

Gen'l John McE. Hyde, hull 18, river str War Dept; sister to above; keel July18/21; launch Mar11/22; deliver Nov1/22, est.

Destrehan, hull 19, sternwheel towboat Pan American Petroleum & Transport Co; 136-6 LBP; 32 beam; 5 loaded draft; simple HP non-condensing eng, 18 in dia by 7 ft stroke, 225 lbs WP; 4 Miss River type boilers, 44 in dia; keel Mar15/22; launch June1/22; **deliver Aug3/22.**

Genevieve, hull 20, sidewheel car ferry Missouri-Illinois R R Co, subsidiary of St. Joseph Lead Co; 285 LBP; 54 beam; 5 loaded draft; 820 DWT; simple HP non-condensing eng, 22 in dia by 8 ft stroke, 200 lbs WP; 6 Miss River type boilers, 44 in dia, 26 ft long; keel June8/22; launch Sept16/22, est; deliver Oct 14/22, est.

## Pacific Coast

### BETHLEHEM SHIPBUILDING CORPORATION, LTD. UNION PLANT

#### Potrero Works

Purchasing Agent: O. W. Streett.

Submarines USN: S-35, hull 140; S-36, hull 141; S-37, hull 142; S-38, hull, 143; S-39, hull 144; S-40, hull 145; S-41, hull 146; **S-35 delivered Aug17/22.**

#### Alameda Works

Chilore, hull 5309, combination ore and coal carrier Ore Steamship Co; 571-6 LOA; 550-1 LBP; 72 molded beam; 44 molded depth; 32-4 loaded draft; 11½ loaded speed; 20,000 D WT; Curtis turbines with Falk reduction gears, 5000 SHP; 3 Scotch SE boilers, 17-6x12, each 4287 sq ft; oil burners; keel Apr17/22.

Lebore, hull 5310, combination ore and coal carrier Ore Steamship Co; sister to above.

No name, hull 5315, ferryboat Jas Rolph & Co; 230 LOA; 63-6 beam over guards, 42 molded; 19-6 molded depth; TE eng, 1400 IHP; propeller drive; 3 WT boilers; keel Feb20/22.

No name, hull 5316, ferryboat Jas Rolph & Co; sister to above; keel May12/22.

### HANLON DRYDOCK & SHIPBUILDING COMPANY, OAKLAND, CALIF.

Purchasing Agent: R. Barker.

Dan F. Hanlon, hull 89, steam schr. D. J. Hanlon; 2500 DWT; 1400 IHP engines; 2 B&W boilers; work suspended.

### LOS ANGELES SHIPBUILDING & DRYDOCK CORPORATION, SAN PEDRO, CALIF.

Purchasing Agent: L. R. McFie.

Hayward, hull 37, double - ended steel ferryboat San Francisco-Oakland Terminal Railways; 225 LBP; 42 molded beam, 62-7 over guards; 11-6 loaded draft; 13 loaded speed; turbo-electric eng, 1350 IHP; 2 B& W WT boilers, 5000 sq ft total HS, 225 WP, 65 superheat, natural draft, oil-burning; keel June28/22; launch Sept25/22, est; deliver Nov25/22, est.

San Leandro, hull 38, double-ended steel ferryboat San Francisco-Oakland Terminal Railways, sister to above; keel June28/22; launch Oct 2/22, est; deliver Dec8/22, est.

### NAVY YARD, PUGET SOUND

Medusa, repair ship for government; 460 LBP; 70 beam; about 19 loaded draft; 17-5 loaded speed; turbine eng, 7000 IHP; 2 WT express type boilers; 10,000 tons disp; keel Jan2/20; launch and deliver dates not set.

Holland, submarine tender for government; 460 LBP; 61 beam; about 20 loaded draft; 16 K loaded speed; turbine eng, 7000 IHP; two WT express type boilers; 10,000 tons disp; keel Apr11/21.

### NAVY YARD, MARE ISLAND

Montana, battleship USN; 660 LB P; 105 beam; 33 loaded draft; 23 loaded speed; 42,200 disp; turbo-electric engs, 60,000 SHP; 12 Bu's express boilers, 74,040 sq ft; keel Sept 1/20.

Decatur, destroyer USN; 310 LBP; 30-11½ beam; 9-4 loaded draft; 35 loaded speed; 1215 disp; geared turbine eng, 26,000 SHP; 4 Normand boilers, 27,000 sq ft; keel Sept15/20; launch Oct29/21.

### PRINCE RUPERT DRYDOCK & SHIPYARD, PRINCE RUPERT, B. C.

Manager: J. H. Pillsbury.

Francois Lake Ferry No. 2, steel ferryboat for Provincial Government; 66 LBP; 27 beam, 8 loaded draft; 12 loaded speed; twin gas engs, 50 IHP; keel Feb/22; launch July10/22; **deliver Aug25/22.**

### W. F. STONE & SON, OAKLAND, CALIF.

Corinthian II, sloop Corinthian Yacht Club; 35 LBP; 8-8 beam; 6 deep.

No name, aux sloop builder's account; 49 LBP; 14 beam; 5-6 deep; gas eng, 15 IHP.

Sparrow, tug Alaska Packers' Association; 65 LBP; 16 beam; 5-6 deep; gas eng, 80 IHP.

No name, trawler Western Fish Company; 65 LBP; 16 deep, 7 loaded draft; Diesel eng, 120 IHP.

No name, trawler Western Fish Company; sister to above.

Pile-driver Naknek Packing Company; 40 LBP; 20 beam; 3 loaded draft.

### TODD DRYDOCK & CONSTRUCTION CORP., TACOMA

Purchasing Agent: C. L. Bankson.

Omaha, hull 100, scout cruiser US N; 555-6 LOA; 550 LBP; extreme beam 55-4; molded beam 54-9; depth molded 26; mean loaded draft 13-6; disp 7100 tons; Westinghouse Parsons turbines and reduction gear, 105,000 IHP; designated speed 34; 12 Yarrows WT boilers; keel Dec6/18; launch Dec14/20.

Milwaukee, hull 106, scout cruiser USN; sister to above; keel Dec13/18; launch Mar24/21.

Cincinnati, hull 107, scout cruiser USN; sister to above; keel May15/20; launch May23/21.

### UNION CONSTRUCTION COMPANY, OAKLAND, CALIF.

Purchasing Agent: S. G. Plummer.

No name, hull 24, bay barge Shell Company of California; 200 LBP; 38 beam; 14 loaded draft; 12,000 barrels; one Scotch donkey boiler, 1350 sq ft HS; **keel Aug/22.**

## Recent Repairs

### BETHLEHEM SHIPBUILDING CORPORATION, LTD.

### Union Plant

Miscellaneous: Pine Tree State, Tahiti, Stockton, Ventura, Yorba Linda, West Notus, Daisy Putnam, Carlos, K. R. Kingsbury, Eagle, Iroquois, President Lincoln, Daisy Gadsby, Hoquiam, Tahoe, Washington, Sea Monarch, Whitney Olson, Shasta, Avalon, Traveler, Mayfair, H. M. Storey, Lyman Stewart, Broad Arrow, Hornet, S. C. T. Dodd, Hawk, Liebre, George L. Olson, La Placentia, La Purisima, Col. E. L. Drake, Hegira, Virginia Olson, Los Angeles, Barge 95, Hammac, Halco, Anglo Mexican, Wilhelmina. Miscellaneous repairs, drydocking, painting: Casco, F. H. Hillman, Water Nymph, Coquille River, Charles Christenson, Wm. F. Herrin, State Dredge No. 3, Governor Markham, Eldridge, Claremont, Northland, Grace Dollar, Enterprise. Propeller repairs: Cottonplant (removing propeller and shaft), Standard Arrow (two blades), Lurline (blade), Oleum (bronze casting). Extensive engine and boiler repairs: Argyll. Engine repairs: San Juan, Vaughan, Smith, Cricket. New boom and mast: Olinda. Hull repairs: Wm. McKenna, Delco. Tailshaft repairs: Cruiser, Ventura (new). Completing unfinished repairs: President Hayes. Installations: Cricket (windlass gear), Mahukona, Makaweli, Makena (all cargo gear and alterations). Drydocking, extensive repairs: Royal Arrow. Drydocking, repairing damaged bow: Ginyo Maru. Deck repairs: San Pedro. Boiler repairs: Tamarow. Conversion to oil burner: Mahukona. Machinery repairs: John McMullin. Miscellaneous repairs: Wyadda, Asbury Park, Washington, Hornet, W. S. Rheem, Simla, Wairuna, Bandon, Standard Arrow, Storm King, Loch Katrine, Simaloer, Thomas L. Wand, Mississippi, Whitney Olson, Regulus, Balboa, Lurline, Daisy Matthews, Charlie Watson, Pleiades, Rongking, Mexico, Argyll, Alaska, Arabs, A. H. Payson, Maunganui, Hammac, Santa Rosa, Maui, Redondo, D. G. Scofield, Annette Rolph, Oleum. Drydocking, painting, miscellaneous repairs: Grace Dollar, Ripley, Korrigan III, Wahkeena, Centralia, San Pedro, Brunswick, R. J. Hanna, Lena Luckenbach, Annie Johnson, Wilhelmina, Standard No. 1, W. S. Porter, La Purisima, West Chopaka, Hyades, F. S. Loop (also pump parts and runner shaft). Two bronze water ends: Dewey. Drydocking: Oklahoma, C. A. Smith, Edward Luckenbach (also miscelloneous repairs). Bore H. P. cylinder: Wilhelmina. Oakland or Transit: One shaft. Conversion to oil burner: Washington. Steering wheel: Coalinga. Engine repairs: Waitemata. New section of stern frame: Wm. F. Herrin. Section of tailshaft: Johanna Smith. Renew 52 feet of keel: Annie Johnson.

### JOHNSON IRON WORKS, D. D. & S. B. CO., NEW ORLEANS

Drydocking and general repairs: Tug Hercules, Str. Memphis, Tug Davey, S. S. San Jose, Dredge (Grant Smith Co.), S. S. Tamaulipas, Str. A. M. Scott, S. S. Sula, S. S. Cibao, Tug El Vivo, S. S. Venator, S. S. Jalisco, S. S. Winifred, Tug Delamar, Dredge No. 7 (Kemp Bend Dredging Co.), S. S. Nicarao.

### LOS ANGELES SHIPBUILDING & DRYDOCKING CORPORATION, SAN PEDRO

Emergency repairs sheathing and hull: Barge No. 2. Emergency repairs hull: Rex. Clean, paint, alter propeller: Henrietta. Repairs rail, stanchions, side lights: Vaquero. Minor engine repairs: Point Firmin. Minor piping repairs: Yale. Extensive hull, machinery repairs: Cahokia. Renew plank in hull: Sierra. Drydock, clean, paint: Imperial. Minor engine repairs: Cape Romain. Repair damaged plate and frame: Santa Inez. Repairs main engine, feed pump: Tasmania Maru. Piping repairs: Coalinga. Bore propeller: Barge Paproca. Thorough reconditioning: City of Los Angeles. Thorough reconditioning: City of Honolulu. Hull, equipment repairs, betterments: Vaquero. Main engine repairs: Conde de Churruca. Hull repairs: Cahokia. Piping repairs: Steel Age. Reconditioning: Barge 1922. Dock, clean, paint, tail shaft repairs: Admiral Farragut. Piping, machinery, miscellaneous repairs, boiler washing, condenser re-tubing: Richmond. Drydock, clean, paint, minor hull repairs: Vigilant. Drydock, clean, paint, tail shaft, minor hull repairs: Vaquero.

### SUN SHIPBUILDING COMPANY, CHESTER, PENNSYLVANIA

General repairs, painting, etc.: San Lorenzo, Carolinian, Schoharie, Agwiworld. Painting, withdrawing tailshaft, repairing rudder: West Isletta. General repairs: Sun. Painting: Teti.

### THE WINSLOW MARINE RAILWAY & SHIPBUILDING CO., INC., WINSLOW, WN.

Drydocking, cleaning, painting: Barge Palmyra (also calking), bktn. Phyllis Comyn, bktn. Alicia Haviside (also keel repairs), bktn. Anne Comyn (also mast repairs), schr. Melrose( also misc. repairs), schr. Em. Nottingham. Repairs to steering gear and engines: S. S. Griffco. Removing and installing hawse pipe: S. S. Eldorado. Repairs to condensers and engines: S. S. Anyox.

The Willamette Iron & Steel Works, Portland, Oregon, will add an extension, 250 feet by 100, to its boiler shop, the main bay of which will be 100 feet wide by more than 500 long. Automatic plate handling machinery will be installed in the new extension. The work will be completed about the middle of October at a cost of about $60,000. The Willamette Iron & Steel Works recently completed a dock at its plant and installed a 15-ton crane, thus facilitating the discharge of materials from steamships. In addition to the new 15-ton crane, the company has a shear of 75 tons and a 20-ton locomotive crane.

# THE CHARTER MARKETS

## Page Freight Report

San Francisco,
September 11, 1922.

Our last report was dated August 10, since when freight rates in parcels in both wheat from the North and barley from San Francisco for the U. K. and Continent declined to a nominal point of 30/- in August and also for September/October, and some lots were fixed for prompt shipment as low as 27/6. In full cargo lots the Norwegian steamer Dicto has been placed with Kerr, Gifford & Company from San Francisco to U. K. and usual Continental range for barley at 35/-, option Mediterranean 2/6 extra. The same charterers have taken the British steamer Stathis for wheat to U. K. and Continent at 36/3. The British steamer Indian City was taken for the same business, the rate on which is not yet given out. Also the Norwegian steamer Progner was taken for the same business for wheat at 35/-; also the Japanese steamer Etna Maru is today reported taken for wheat for the same business by the Northwest Wheat Growers' Association; the freight rate is not stated. The Japanese steamer Yayoi Maru and Nanking Maru are both reported fixed for the Orient for wheat from Portland at a rate of $4.75 a ton.

In the early part of August J. J. Moore & Company took the British steamer Wonganella for a full cargo of lumber for Australia, usual range, at $13, and the same charterers have since fixed the British steamer Clan Macvicar for the same business at the same rate, as also the schooner Robert R. Hind for Adelaide and the barkentine Ella A. for Sydney, terms private. The British Columbia Mills Timber & Trading Company has taken the barkentine Forest Friend for a full cargo of lumber from Hastings Mill to Sydney and/or Newcastle at $15 a thousand feet.

For Japan the Japanese steamer Malta Maru was fixed for a full cargo of lumber to Yokohama/Moji range at $10.50 a thousand feet by J. J. Moore & Company; and Dant & Russell chartered the British steamer Welsh City for the same business for three ports Yokohama/Moji/Shanghai/Taku Bar range at $11. Two Japanese steamers are reported fixed by the Robert Butler Lumber Company of Portland, both for Japan, but the rates of freight are not stated.

The barkentine Thos. P. Emigh is fixed for a full cargo of lumber from Puget Sound to Callao at $16 a thousand feet by the Mohns Commercial Company.

The steamer Romsdalshorn is reported fixed for lumber from British Columbia for a port north of Hatteras at $12.25; charterers' names have not been given out. The British steamer Monteagle is reported fixed by Balfour, Guthrie & Company for a full cargo of lumber from British Columbia to Montreal at $15.

For nitrate from Chile the Minnie A. Caine has been fixed for Hilo to Balfour, Guthrie & Company, and the same charterers have taken the schooner William Taylor for Honolulu, terms private.

Burns, Philp & Company have chartered the schooner Resolute from the Solomon Islands to San Francisco, terms private.

The schooner Elinor H. has been fixed for a full cargo of coal from Newcastle to Ahukini at $4 by Balfour, Guthrie & Company, and W. L. Comyn & Company have taken the British steamer Canadian Skirmisher for coal from Newcastle to San Francisco, and J. J. Moore & Company the Canadian Highlander for Port Allen and one other Canadian government-owned steamer for Honolulu. The rates on these fixtures have not been divulged. The steamer Benita was closed to Hind, Rolph & Company for coal from Newcastle to San Francisco at $3.25 a ton, and the barkentine E. R. Sterling was fixed for the same business by James Rolph & Company, terms private.

PAGE BROTHERS, Brokers.

## Beyfuss Freight Report

San Francisco,
September 11, 1922.

Our last report was dated August 8.

Grain to Europe: The railroad strike has delayed the shipments of grain to seaboard and is, in a measure, responsible for the dearth of chartering in the last few weeks, although a few steamers have been taken from the Northwest for U. K. or Continent, the basis being about 36/3, with regular liners accepting considerably less than this. From San Francisco no full cargoes are reported, and considerable distress freight has been in evidence and rates have been ruling in the neighborhood of 30/-, and a few shipments have been made at less than this rate.

Lumber to the Orient: Early in the month several fixtures were made of full steamer cargoes at about $11, since when owners have been endeavoring to get higher rates, and this, together with an advance in the price of lumber, has again stopped the chartering so that today the market is quiet and rates are quotable, nominally, at about $11.50.

Lumber to Australia: Several steamers have been fixed for this destination, rates ruling at about $13, and we also have to report a large sailing vessel, taken on private terms, for one or two ports.

Lumber to West Coast of South America: Although numerous inquiries have been in the market from time to time, only one full cargo transaction is reported: that of a large sailing vessel at about $16 for early loading.

Two steamers are again reported fixed for lumber from British Columbia to American Atlantic ports. One for prompt loading is destined for Montreal, and will be the last steamer this season before the ice closes the St. Lawrence River. The other steamer is reported for a North of Hatteras port and rates for these fixtures are given us at about $12.25. C. BEYFUSS CO.,
Brokers.

## Book Reviews

**Official Proceedings of the Ninth National Foreign Trade Convention;** octavo, bound in vellum with gold stamps, 625 pages; for sale by the National Foreign Trade Council, 1 Hanover Square, New York City; $2.50 postpaid.

The book contains a complete stenographic report of the proceedings of the convention, which was held in Philadelphia in May. This year's convention took as its theme "Financing and Expanding Foreign Trade", and consequently most of the addresses dealt with some phase of that problem. There were, moreover, numerous group sessions, which went more deeply into some questions than was desirable in the general sessions.

**More Work Per Man,** by John H. Van Deventer, M. E. 440 pages, with numerous diagrams and charts; bound in red buckram with gold stampings; published by The Engineering Magazine Company; a companion volume to Planning Production for Profit, and compiled in the same way from articles in Industrial Management.

Nine main sections make up the volume, entitled: How to Pick the Man for the Job, Solving the Labor Turnover Problem, Training and Education of Labor, The Foreman, Employment Management and Labor Maintenance, Industrial Relations and the Shop Committee, Wage Systems and Other Incentives, The Human Element in Industry, The Reduction of Waste and Fatigue.

# SHIPPING NOTES

Swayne & Hoyt, Inc., San Francisco, have opened a Southern California branch, with representatives at Los Angeles and San Pedro, to look after the interests formerly taken care of by the Los Angeles Steamship Agents. Their three services out of the southern port will be continued without interruption.

* * *

Towing a log raft from Astoria, Oregon, to Point Loma, California, a distance of approximately 1050 miles, in 12 days and 11 hours, is the record recently made by the Red Stack tug Sea Lion. The raft contained 5,000,000 feet of logs and had a deck-load of 1,000,000 feet of cedar posts and telephone poles, in addition to 300,000 feet of lumber. The best previous record was made several years ago by the tug Hercules, which covered the same route in 12 days and 15 hours.

* * *

Under the terms of an agreement between the United States Shipping Board and the Pacific Mail Steamship Company, Manila, instead of Hongkong, is to be made the terminal point of the "535" liners in the trans-Pacific service. The ships will sail from San Francisco to Shanghai, thence to Hongkong, and thence to Manila, resulting in a saving of four days as against the old routing, which sent the vessels to Shanghai and Manila, then to Hongkong, back to Shanghai, and across the ocean again. Some of the advantages to be gained by the new plan will be quicker dispatch of treasure shipped from the United States to the Orient; reduction in transportation costs for carrying Chinese steerage passengers, most of whom disembark at Hongkong, and slightly better dispatch of returning Manila freight. Five vessels will be operated on the run by the Pacific Mail Company, which will give a bi-monthly sailing.

* * *

The Yamashita Kisen Kaisha of Kobe, whose interests in the Pacific Northwest until recently have been taken care of by A. M. Gillespie, Inc., have formed the Yamashita Company for the purpose of operating agencies at Portland and on Puget Sound for the Y. K. K. vessels. Y. Hisatomi of Kobe, manager of the Yamashita Kisen Kaisha, who has been studying the shipping situation in the Northwest, is president of the new company. He will return to Japan after all arrangements have been concluded to his satisfaction, but K. Uchida, who has been made vice-president and treasurer, will make his headquarters at Portland, where offices have been established in the Spalding Building. With the sailing of the Hokko Maru in September, service to Oriental ports on a bi-monthly schedule will be inaugurated.

* * *

A new high record for tons of cargo carried through the Panama Canal was set by the steamer Marore of the Ore Steamship Corporation, when she made the transit of the canal on July 19 with 20,000 tons of iron ore, bound from Cruz Grande, Chile, to New York, says the Panama Canal Record. The previous record was set by a sister ship of the Marore, the Bethore, making the transit on May 29 with 19,000 tons of ore. The Marore was drawing 33 feet of water at time of transit, the Bethore 32 feet 6 inches.

Although the Bethore and the Marore are of similar construction and differ very little, if at all, in deadweight carrying capacity, the Bethore's canal tolls are $12,020, while the Marore's tolls are only $5,156.40. This is due to a difference in the tanks. In the Marore they are blanked off in such a way that they can only be used for salt water ballast, and do not figure in the net tonnage. On the Bethore, however, the tanks are available for oil cargo, and on her voyage south this ship will commonly carry oil from Mexico, returning with ore from Chile. The passage of the Marore with 20,000 tons of iron ore, under payment of $5,156.40 in tolls, sets a new low figure for the cost of tolls per ton of cargo, 25.78 cents.

* * *

The Federal Telegraph Company has announced the opening of a marine radio station at San Pedro. It will be operated in conjunction with the beach station of the company at San Francisco and will permit of better radio communication between Pacific Coast cities as well as a wider service to ships at sea. In conformity with a recent agreement, the Navy Department will discontinue handling commercial messages by radio from Los Angeles to ships at sea. The call of the San Pedro station is "KOK" with a wave length of 600 meters. A 24-hour service will be maintained.

* * *

The Los Angeles Lumber Products Steamship Company is the name of the new organization formed to take over the ownership and operation of the fleet of lumber schooners that will transport the rough-sawed logs from the timber properties of the Los Angeles Lumber Products Company in British Columbia to the company's lumber manufacturing plant in the west basin of Los Angeles harbor, part of the site of the Los Angeles Shipbuilding & Drydock Corporation. The new concern has a capitalization of $1,000,000, and its officers are: Fred L. Baker, president; Erle M. Leaf, vice-president and general manager; Frank L. Buckley, vice-president; and Laurence Macomber, secretary. Three steel cargo vessels of 4100 tons each have been purchased in the East and are to be converted at the Los Angeles shipyard into the most modern type of lumber carrier. A tentative sailing schedule has been set for October 15, contingent upon the completion of this reconditioning work.

* * *

The United Fruit Company has established a system of medical service and consultation by radio for ships at sea, similar to that of the United States Public Health Service described in the April issue of Pacific Marine Review. The company and its subsidiaries maintain hospitals at Santa Marta, Colombia; Port Limon, Costa Rico; Almirante, Panama; Tela and Puerto Castilla, Honduras; and Puerto Barrios, Guatemala. In addition, radio stations are maintained at New Orleans and Burrwood, Louisiana; Fort Morgan, Alabama; and Swan Island in the Caribbean Sea. All of the United Fruit Company's passenger ships carry physicians. A radiogram addressed by a ship's captain to any one of these sources giving the details of a case of illness or accident on his vessel will be answered by experienced medical advice without charge from the United Fruit Company. The service was designed principally to assist vessels not carrying medical officers, but is free to the ships of all nations.

* * *

The British Ministry of Shipping has paid to the United States Shipping Board $12,000,000 in final settlement of claims made by the board against the ministry and by the ministry against the board. These claims grew out of transactions during the war and after.

* * *

The Atlantic Transport Line's passenger service between New York and London will be resumed in March next by the Minnewaska and Minnetonka, now building at Belfast, Ireland. They are fine, sturdy ships 600 feet long, of 21,000 gross tons each, and are oil burners. They are the forerunners of a new fleet of four practically identical ships to replace the famous "Minne" class sent to the bottom by torpedoes in the war. Each of the new ships will carry about 320 first class passengers, in addition to some 17,000 tons of cargo, and will cross the Atlantic from pier to pier in less than nine days. Like their famous predecessors, the ships are designed for great steadiness at sea.

* * *

The steamship Cottonplant, mentioned on page 461, August issue of Pacific Marine Review, was bought by the Pacific States Lumber Company (formerly the Coos Bay Lumber Company) and not by the Pacific Lumber Company, as was stated. The purchase was made through the office of Edward S. Hough of San Francisco, engineer and surveyor, who also supervised repairs and alterations at the Baltimore Drydocks Plant of the Bethlehem Shipbuilding Corporation. The boat carries 1,413,000 feet of lumber and makes the run from Coos Bay to San Francisco in thirty-six hours. She is commanded by Captain Oleson, who has been in the service of the Coos Bay Lumber Company since it started. His first command was the Nan Smith, built at Newport News in 1907 and designed by Edward S. Hough. He later took command of the Adeline Smith, the first vessel to be designed on the Hough system of center line tank and twin hatches. He later commanded the C. A. Smith until he was sent to take over the Cottonplant in March. The Cottonplant uses the electric system of loading and unloading, which gives her a quick turn at both ends.

* * *

Chas. Cory & Son, Inc., will install their fusible type fire alarm system on the express passenger ship being built for the Inter-Island Steam Navigation Company at the yard of the Sun Shipbuilding Company, Chester, Pennsylvania. The Cory fire alarm system will also be part of the equipment of the two combination steamers building for the Seaboard Bay Line at the Pusey & Jones plant, Wilmington, Delaware, and Cory & Son have been awarded the contract for the installation of the entire electrical lighting and communicating apparatus, as well as the mechanical signalling system, on these two vessels. This firm also has the contract for the fire extinguishing equipment on the Leviathan, which means that the big ship will be protected by the well-known Foamite Firefoam system.

* * *

The East Asiatic Company of Copenhagen, Denmark, has opened a branch office in Seattle with jurisdiction over Northwest operations. M. Bildsoe, formerly of San Francisco, has been placed in charge. The company has maintained a schedule of monthly sailings in its Seattle-European service, operating a fleet of large motorships, which heretofore have been handled by Balfour, Guthrie & Company without an agency agreement.

* * *

Bids will be received by the Army Engineers, 725 Central building, Los Angeles, until 11 a. m. October 5, for the dredging of areas easterly of the main entrance channel, Los Angeles inner harbor. Additional information may be had on application.

# ABOUT PEOPLE

**O. B. Kibele** has succeeded John Murray, retired, as works manager of the Los Angeles Shipbuilding & Drydock Corporation. Mr. Kibele has served with the Union Iron Works, Schaw - Batcher and Southwestern yards.

**Elmer Schlesinger** has resigned as general counsel of the Shipping Board, effective September 1. Mr. Schlesinger's duties will be assumed jointly by **Sanford H. E. Freund,** general counsel, and **Chauncey G. Parker,** chief counsel in charge of litigation, both of the Emergency Fleet Corporation.

Mr. Schlesinger was a member of the firm of Mayer, Meyer, Austrian & Platt when he joined the board in June, 1921. He went to the government with the idea of spending a few months in organizing the legal department of the board and the Emergency Fleet Corporation. For personal reasons, particularly the recent death of Levy Mayer of the Chicago law firm, of which he was a member, Mr. Schlesinger decided to go into private practice at once. He will join the firm of Stanchfield & Levy of New York.

**Berry E. Dunn** has been appointed San Francisco representative of the Los Angeles Shipbuilding & Drydock Corporation and the company's offices have been moved to the Balfour building. After many years in the engineering department of the Union Iron Works, now the Bethlehem Shipbuilding Corporation, Mr. Dunn had charge of the engineering department of the city of San Francisco from 1915 to 1918, when he was appointed technical engineer for the Pacific division of the United States Shipping Board with headquarters in San Francisco. For the past year he has been in private practice as a consulting engineer.

**H. L. Tabke** has been made manager of the steam coal and shipping department of Hind, Rolph & Company, San Francisco, vice **David Ewart,** resigned.

**Arthur A. Grant** has been appointed general manager of the Jahncke Dry Docks, Inc., New Orleans. For the past eight years Mr. Grant has been marine superintendent of the Sinclair Refining Company at New Orleans and prior to that was connected with the Morse Drydock & Repair Company, New York.

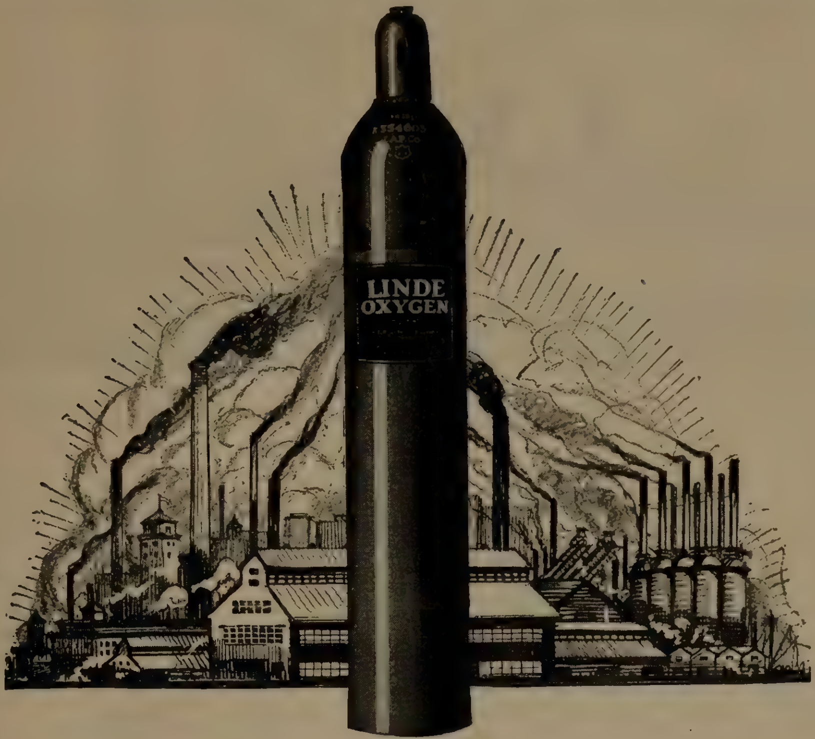
**Chester Massey,** formerly associated with the Globe Shipbuilding Company of Superior, Wisconsin, and the Globe Shipbuilding & Repair Company of New York City, has acquired the property of the latter and formed the Massey Shipbuilding Company at Superior, Wisconsin.

At a recent meeting of the board of directors of the Pacific Alaska Navigation Company, the holding company for the Pacific Steamship Company, the following officers were elected: **H. F. Alexander,** president; **Chester Thorne,** chairman of the board; **R. Stanley Dollar,** first vice-president; **E. A. Stuart,** second vice-president; **E. H. Hall,** treasurer; **Frank Woolsey,** secretary. The only change was the election of Mr. Hall to succeed A. M. Dollar, resigned.

**Louis Stewart** has been made manager of the lumber department of Sudden & Christenson, San Francisco. Mr. Stewart is well known in lumber circles, having previously been affiliated with the Hammond Lumber Company, W. L. Comyn & Company and the Ocean Lumber Company.

**A. Melville Dollar,** managing director of the Canadian Robert Dollar Company and treasurer of the Pacific Steamship Company, will enter the shipping business for himself in Canada. It is understood that **K. J. Burns,** formerly general agent of the Great Northern Railway at Vancouver and for the past two years with the Dollar Company at that port, will succeed Mr. Dollar.

**P. A. Becker** has resigned as Lloyd's agent at the port of San Francisco. The British consul-general, the Honorable Gerald Campbell, will act in his stead, pending the appointment of a successor.



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2012-22

The steamship City of Los Angeles as she appeared when passing from the yard of the Los Angeles Shipbuilding & Drydock Corporation for her sea trials following reconditioning. She sailed on her first voyage in the Los Angeles-Honolulu service of the Los Angeles Steamship Company September 11. More than 300 members of the Los Angeles Chamber of Commerce were passengers. The City of Los Angeles and the City of Honolulu, the other vessel to be employed in the service, are painted white with black funnels.

**E. E. Anderson** has taken up the duties of passenger agent for the Pacific Steamship Company at Portland. He was formerly with that company at Seattle. **W. L. Oxley** has been made assistant passenger agent for the Portland office.

**Captain A. R. Pearson,** who was the pilot aboard the Iowan at the time of her collision with the Welsh Prince off Altoona May 28, has had his license suspended for a period of four months by the Oregon State Board of Pilot Commissioners. His Federal license had already been suspended for three years by Inspectors Edwards and Wynn. An appeal has been made to Captain John K. Bulger, supervising inspector, at San Francisco.

**Hugh Fitzgerald,** for several years in the San Francisco office of Swayne & Hoyt, has been put in charge of the company's Los Angeles office, with the title of Southern California manager. **H. P. Pickering** will act as port superintendent at San Pedro, California.

**Charles A. Stephens,** for a number of years employed by the government in various capacities, including that of deputy surveyor and boarding officer, has been admitted as a partner into the firm of J. M. Mickey & Company, custom house brokers, San Francisco. The name has been changed to Stephens & Hickey.

**Captain Harry C. Thorsell,** master of the freighter Henry T. Scott, and **Captain Harry Sears,** master of the freighter Harry Luckenbach, have both been exonerated by the Seattle board of United States Steamboat Inspectors from blame in the matter of the collision of the two vessels in the Strait of Juan de Fuca July 16. The finding in the investigation was that both officers had acted with caution and kept within the rules for foggy weather.

**Captain Jorgen Hansen,** port pilot for the harbor department at San Pedro, California, has resigned. Captain Hansen has a record of fifty-five years' service on the high seas.

**John J. Gorman** has resigned as Oriental agent of the Pacific Steamship Company at Seattle to become general manager of the Yamashita Company at Portland, a company formed by the Yamashita Kisen Kaisha for the operation of agencies at Portland and on Puget Sound for its vessels. **George A. Heyburn,** formerly Mr. Gorman's assistant in the Admiral Line's office, will succeed him. **E. McConalogue** will become Portland manager of the Yamashita Company, having tendered his resignation as Portland agent of the Latin-America Line. **A. H. Chalmers** has been named as his successor with the latter line.

**Major V. A. Cartwright** has established a steamship agency and brokerage business with offices in the Railway Exchange Building, Portland, Oregon. Major Cartwright was formerly assistant general manager of the Columbia Pacific Shipping Company in charge of operations.

The United American Lines, managing agents for the American-Hawaiian Steamship Company, have announced the following changes in organization: **John Sonderman** has been placed in charge of the Baltimore branch office, Room 505 Maryland Casualty Tower building; **Charles E. Barry** has been appointed freight traffic manager, intercoastal division, with headquarters at 39 Broadway, New York; **Charles B. Hopper** has been given the position of Western freight manager in Chicago; **Wilmer M. Wood** has been made manager at Philadelphia, vice R. L. Francis, resigned.

**A. T. Gibson** has purchased a controlling interest in the warehouse business of the Lawrence Warehouse Company, San Francisco, from **V. O. Lawrence,** president, who will retain control of the shipping connections of the company. Mr. Gibson was formerly general manager in charge of warehouse operation. The two businesses, although operated by different companies, will continue to be closely affiliated.

## Deaths

**Captain Samuel Lund,** dockmaster of the Moore Shipbuilding Company, in Alameda, California, August 29.

**Captain Henry H. Cousins,** superintendent of the Humboldt Stevedoring Company of Eureka, in that city July 7. Captain Cousins was a brother of Captain N. H. Cousins, master of the Pacific Steamship Company's steamer Ruth Alexander.

**Captain William Henry Whitely,** "Pilot" Whitely along the waterfront and one of the best known master mariners on the Pacific Coast, in Victoria, B. C., August 21.

**Captain J. L. Wilson,** for a number of years in the trans-Pacific and Panama services of the Pacific Mail Steamship Company and later Pacific Coast pilot, in Baltimore, in July.

**Captain H. B. Smith,** for forty years in command of vessels off the Pacific Coast, in Oakland, California, August 14.

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# PROPELLER EFFICIENCY

## Savings Made by Cloverleaf Installation on Boat of the Alaska Codfish Company on San Francisco Bay Are Outlined

By R. Z. DICKIE

WHEN the owner of a boat is approached on the subject of propellers he is not likely to be seriously interested unless he is shown how important to the success of his power plant is the correct designing of the screw. Usually the owner is familiar only with the orthodox helical type and takes that screw as supplied by the engine builder.

### Possible Savings Outlined

The purpose of this article is to indicate briefly a few of the many ways in which the efficiency of the propeller affects the every day operation of commercial craft, and the savings that may be effected by the installation of a properly designed screw. Assuming the power plant remains as is in any vessel under consideration the direction in which improvement may be expected is increase in speed. Increase in speed with the same power reduces fuel bills, shortens round trips, often eliminates overtime charges both for crew and for stevedores, and makes for a more contented and efficient personnel.

As an illustration of the way in which this works out in actual practice we may take the 80-ton twin-screw scow Champion of the Alaska Codfish Company. This vessel is powered with two 20-horsepower distillate-burning Corliss engines, and operates from San Francisco to Redwood City, a run approximately 27 miles in length. Her average time on this trip has been 3½ hours, varying slightly according to tidal and wind conditions. Her distillate consumption for the round trip has been approximately 27 gallons. She has recently been equipped with a pair of Cloverleaf propellers and is now averaging 3 hours for the run on a round trip distillate consumption of 23 gallons. It will be seen that the gain in speed and the reduction in fuel consumption are practically equal, a little over 14 per cent in each case, showing that the power used is the same with the Cloverleaf as with the former propellers, but that in the case of the Cloverleaf that power is absorbed much more effectively.

### What It Means

Now let us see just what this means to the owner in actual commercial savings. Considering the vessel's time worth $5 an hour (a very conservative figure) and assuming 25 working days a month we find it works out something like this:

| | Per Mo. |
|---|---|
| Time saving at $5 an hour | $125 |
| Fuel and lubricating oil at $1 a round trip | 25 |
| | $150 |

It will be seen therefore that in this instance the savings effected by the installation of Cloverleaf propellers will return to the owner the cost of that installation several times in the course of a normal year. At the same time the vessel and engines are running more smoothly, will require less maintenance charges and are considered by

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owners and operators in every way a better job, thereby attracting the better class of employes and tending to keep those employes more contented.

The owner has expressed his satisfaction as follows, in a letter to the Cloverleaf Propeller Company of San Francisco:

"Two Cloverleaf propellers were recently installed in the gasoline scow Champion, which vessel is owned by the Alaska Codfish Company and operated from the packing plant at Redwood City to San Francisco and surrounding places on the bay. It developed on the first trip the change in propellers made increasing speed in the running time of 30 minutes in 27 miles, and the fuel consumption was reduced by 4 gallons. At the present price of distillate it approximates fuel savings sufficient during the year to justify the expense for change of propellers.

"A. GREENBAUM,
"President Alaska Codfish Co."

## THE HAVISIDE CATALOG

HAVISIDE COMPANY, 56 to 62 Steuart street, San Francisco, has just issued a catalog that cannot fail to interest the trade, covering as it does a full line of ship chandlery, wire and manila rope and cotton duck, etc., as carried in stock by the company.

In addition to the above there are shown many items that have not heretofore been shown in any catalog, such as wire and manila rope, net slings, save alls, ship's ladders, canvas slings for handling flour, nitrates, coffee, etc.; also ash bags, laundry and sailors' bags and many other items, all of which are manufactured by Haviside Company.

The book contains many valuable tables of information of interest to persons engaged in the shipping trade as well as a number of views of vessels rigged or work done by the derrick barges that this firm maintains on San Franicsco Bay.

This book has the distinction of being the first ever compiled in San Francisco by any firm in the ship chandlery line and reflects great credit on all who had a part in its compiling and publishing. It is a book of 400 pages printed on first class book paper and strongly bound in cloth, with gold stamping.

Anyone interested in the shipping trade cannot fail to appreciate a copy.

Plant of Alaska Codfish Company, Redwood City, California

## PREHEATING CAST IRON

IN order to compensate for the lower melting point of cast iron as compared with steel, the Metal & Thermit Corporation, New York, recommends that in preheating cast iron sections, preparatory to thermit welding them, these sections be heated only a little more than necessary to show color, such as a dull red heat. If this advice is followed, a quieter pour will be obtained and the fusion will be just as good. This practice has now been tried successfully in numerous cases, the most important case being a thermit weld on a large cast iron press head which required 1100 pounds of thermit. The weld was perfect, with good fusion to the extreme of the edge of the collar, although the cast iron section was heated only to a dull red heat.

It is believed that this point is very important to bear in mind and that operators will find that it will overcome possible difficulties which they may be experiencing in cast iron welding. One might suppose that as the cast iron of the parts being welded is not quite so fully expanded at this lower temperature, there might, therefore, be a slightly greater tendency for hair-line cracks to appear in the thermit steel collar perpendicular to the line of break. In actual practice, however, this has not been found to be the case, probably because of the fact that the expansion curve is much greater up to a red heat than it is from the red heat to the white heat and that the sections are, therefore, practically fully expanded at this dull red heat. It is certainly also true that the thermit steel at first heats and expands the sections with which it comes in contact and, therefore, the slight difference in preheating is negligible.

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THE five-inch links illustrated, and various other sizes of "Naco" anchor chain, connecting links, shackles and swivels, can be seen at the Second Annual Marine Exposition, Nov. 4th to 11th.

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# HARBOR DEVELOPMENT

## Harbor Development

Of the $42,215,000 appropriated by Congress for river and harbor improvement during the fiscal year 1923 approximately $7,000,000 has been reserved for future emergency expenditure. Of the remainder, Pacific Coast allotments are as follows: Los Angeles harbor, $500,000; San Francisco, $10,000; Oakland, $100,000; Richmond, $100,000; Petaluma creek, $50,000; Humboldt harbor and bay, $250,000; San Joaquin river, $33,000; Stockton and Mormon channels, $10,000; Sacramento river, $95,000; Yuba river debris, $30,000; San Diego harbor, $160,000; Coos Bay, Oregon, $150,000; Coos river, $3000; Yaquina bay and harbor, $300,000; Columbia river and tributaries, Celilo Falls to Snake river, $12,500; Snake river, $10,000; Clatskanie river, $6200; Yamhill river, $27,300; Lewis river, $17,700; Cowlitz river, $11,000; Skamokawa creek, $2000; Grays river, $2000; Columbia and lower Willamette rivers, below Vancouver and Portland, $850,000; Willapa river and harbor, $265,000; Grays Harbor and bar entrance, $36,000; Puget Sound and tributary waters, $30,000; waterway Port Townsend bay to Oak bay, $10,000; Lake Washington ship canal, $40,000; Swinomish slough, $50,000; Bellingham harbor, $4000.

**Los Angeles Harbor**—According to the board of harbor commissioners, the $500,000 allotment of the rivers and harbors funds will be used to widen the main channel at the harbor and to build up the diversion channel west of Long Beach. Half of the money will be spent placing approximately 200,000 tons of rock on the riprap structure of the channel, which is a part of the flood control system of the Los Angeles river and has become silted. The remainder will be used to widen the main channel, which is now 500 feet wide, an additional 500 feet at least. This will be done on the east side where the Union Pacific will have its terminal on Terminal Island, and at the same time the channel will be straightened on the west side where it curves into Fifth street, San Pedro. Work will be commenced probably within sixty days.

Permits have been issued by the harbor commission to the Associated Oil Company for the construction of wharves and storage tanks to cost approximately $1,000,000. This new shipping station will be located directly opposite the Los Angeles shipyard at berths 118 and 119, which are situated at the lower end of the west channel on the north side just opposite the outfitting wharf of the shipyard. There will be spur track connection from the west basin line of the Pacific Electric, and the station can also be reached by the boulevard from the Wilmington road running around the west basin. Between six and seven acres of land will be required for the storage tanks.

The harbor department is making strenuous efforts to relieve the congestion that has prevailed for some time in that port. Some of the new construction under way comprises 2000 feet of wharfage for the American-Hawaiian Steamship Company; 1100 feet for the McCormick Lumber Company; 1100 feet for the L. W. Blinn Lumber Company; 1000 feet for Norton, Lilly & Company; 1000 feet for the Union Pacific Railroad; 300 feet for the E. K. Wood Lumber Company; and 500 feet north of First street for the department.

The Board of Harbor Commissioners has ordered plans prepared for the first of the Union Pacific warehouses. The first transit shed, which will be of steel and of the latest design to facilitate the rapid handling of cargo, will be 850 feet long and 120 feet wide. It will be erected on the southerly side of the slip just north of the East San Pedro ferry landing. It is estimated that the first wharf and shed will cost about $1,000,000. The project will be financed from the $2,100,000 set aside from the channel-widening fund.

**Portland**—Work has commenced on the construction of four dikes at Willow bar, the beginning of a diking program for improving channel conditions at certain points on the Columbia River where dredging cuts have been maintained. Five dikes are in place at Henrici bar, the first placed in 1917 and the last in 1921. The work, which is being done under the direction of the second Portland district, corps of engineers, United States Army, has demonstrated that valuable gains are attained through the artificial current changes.

The commission of public docks recently authorized the purchase and building of new dock equipment to the amount of $10,000. Among the specifications were trucks and trailers for handling cargo at the new unit at terminal No. 1, pipe-racks, gangplanks, carjumpers and other gear and four tractors, while additional two- and four-wheel trucks and trailers will be bought for the other terminals.

Additional electric wiring is being done in the new unit at terminal No. 1. The contract was awarded to the Coast Steel & Machinery Company on a bid of $3990 and 35 days.

Funds derived from the sale of $320,000 worth of municipal grain elevator improvement bonds, recently authorized by the commission of public docks, will be used to complete the north half of pier No. 1 at terminal No. 4 and for other work. The bonds to be sold are part of a $3,000,000 issue authorized by the voters on June 4, 1917.

**Pearl Harbor**—Bids have been called for on the construction of a reinforced concrete quay wall and pier, the cost of which it is estimated will be somewhere in the neighborhood of $1,000,000. The quay will connect the drydock with the Ten-ten Wharf (so called because of its length, 1010 feet), and the pier, which will be an extension of the wharf, will add 550 feet to its length and will be 80 feet wide. The connecting quay wall will be 400 feet over all, including a right-angle jog in the ground plan, with a width of 65 feet. Included as part of the project is the dredging of a basin 35 feet deep and 60 feet wide to permit vessels to lie along either side or the outer end of the pier. This will connect with the main channel.

**Sunnyvale, California** — The contract has been awarded for grading and leveling the land in the vicinity of the turning basin of the port of Sunnyvale. Work on the grading at the land end of the port will start immediately, to be followed by the construction of docks and warehouses. It is estimated the project will be completed within two months. Berry shipments constitute the bulk of the business handled by the port.

**San Diego, California**—Plans outlined by officials for enlarging and improving the various naval establishments on San Diego Bay call for an expenditure of approximately $9,590,000. This sum the naval authorities will ask to have included in the 1923-1924 naval budget, but probably only half that amount will be appropriated and the balance allowed to go over into the following fiscal year. Among the more important projects are: building two 1000-foot piers at the destroyer repair

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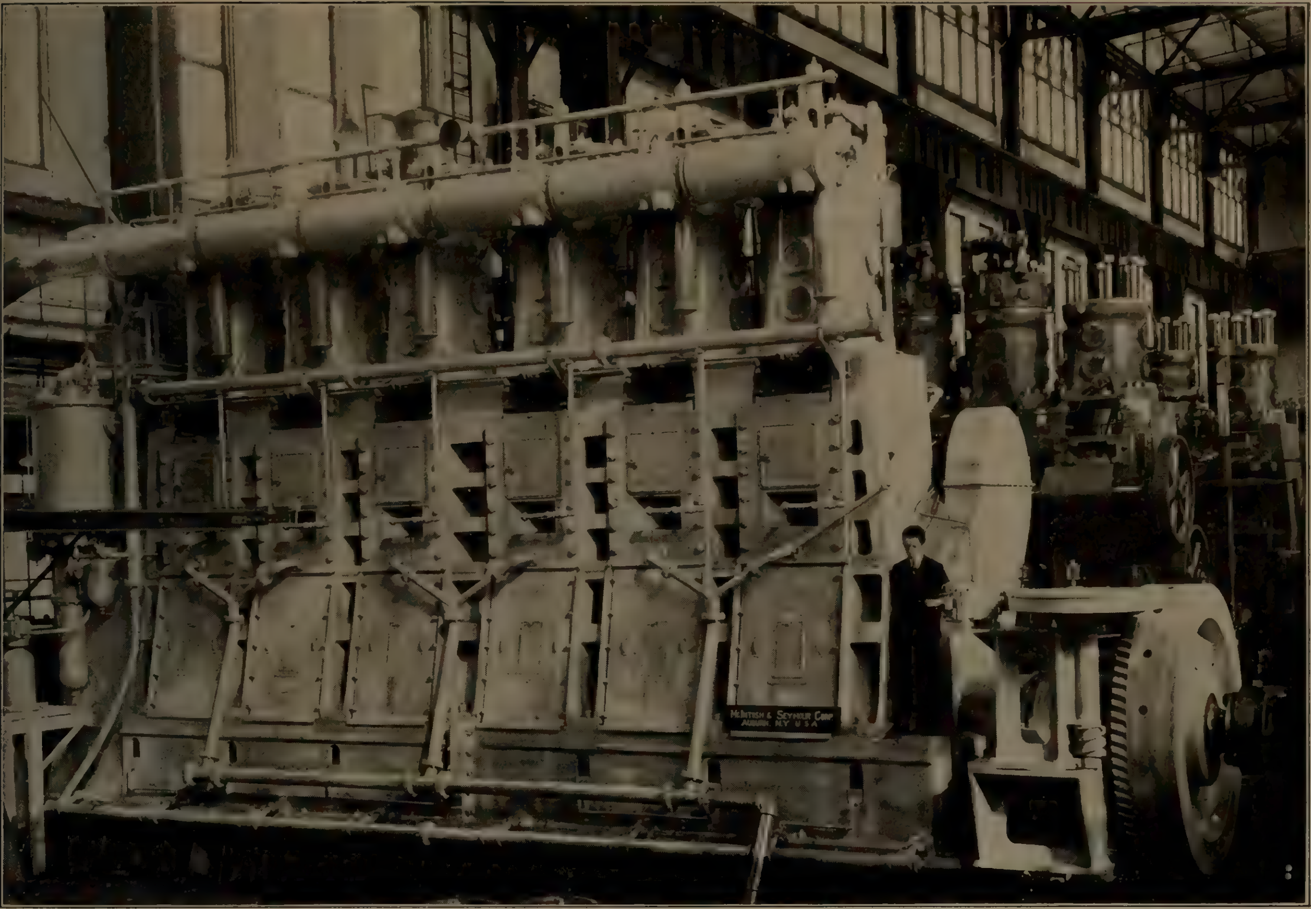

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base, a pier at the foot of E street to serve the fleet administration building and storehouse at the foot of Broadway, and another at Loma Portal; erection of another 2500-ton marine railway, a duplicate of the one now in operation at the destroyer repair base; construction of a large number of barracks, storehouses, shops, power plants; the laying of paved sidewalks and roads; and the installation of electric light, power, water and sewer systems at the naval hospital, naval air station, marine base, naval training station and the destroyer repair base.

**Honolulu**—Plans and specifications for the dredging of 600 feet of the proposed Kalihi channel from Honolulu harbor basin to Kalihi basin are being prepared, and bids will be called for some time in October. The cost of dredging this portion of the 1500 feet necessary to connect the two harbors will be covered by the $300,000 appropriated for the purpose. The approach to the channel proper, which will be 800 feet wide, has already been dredged out, and the 600-foot channel can be used for mooring purposes, even though the remaining 900 feet is not completed for some time.

**Astoria, Oregon**—Contingent upon the city of Warrenton, Oregon, paying its proportion of the cost, the port of Astoria commission has authorized the improvement of the Skipanon River channel by removing a bad curve in the river, clearing the channel to a depth of 20 feet from the Clay Products plant to the mouth of the river, deepening the turning basin to 25 feet, and constructing 21 wing dams, each 30 feet in length, along the bulkhead to protect that structure. The dredging and bulkhead repairs will cost approximately between $20,000 and $25,000. The Astoria port commission has agreed to spend $15,000 of the port funds, provided Warrenton will purchase that amount of port bonds at par and appropriate additional money to complete the improvement project as outlined by the engineers. Dredging will be commenced as soon as the Warrenton municipal council has approved the offer.

# THE MARINE EXPOSITION

## The Marine Exposition

The original model of the steamship Leviathan, now being reconditioned by the Newport News Shipbuilding & Drydock Company, is to be exhibited at the American Marine Exposition, to be held under the auspices of the American Marine Association, at the Grand Central Palace, New York, November 4 to 11. This is the original model that was owned by German interests, and is said to be some 38 feet long and the largest and finest in the world. It was recently received from Hamburg.

The model and a complete set of original plans have been purchased by Gimbel Brothers, New York, who are furnishing the steward's equipment for the reconditioning of the vessel under contract with the United States Shipping Board. Arrangements have been completed with Gimbel Brothers so that the American Marine Association will exhibit the model at the November marine show. In addition to the model showing details of construction to scale, it will be the first opportunity that anyone in this country has had of seeing what the underwater body of the vessel really looks like.

The Newport News Shipbuilding & Drydock Company and the American Marine Association have joined in an effort to arrange a Leviathan exhibit, the equal of which has never been seen in this country. The exhibit has been planned so that any concern furnishing material for the reconditioning of the ship may suitably display its part in the reconditioning of the world's greatest vessel by exhibiting in this section.

Full particulars concerning arrangements to exhibit may be obtained from the office of the American Marine Association, 15 Park Row, New York City.

* * *

At the Marine Show prominent speakers will address combined gatherings of maritime associations. An auditorium will be constructed on the second floor of Exposition Hall for such meetings. The following associations will participate in these programs: Society of Naval Architects and Marine Engineers, American Society of Marine Designers, National Merchant Marine Association, American Steamship Owners' Association, Maritime Association of the Port of New York, New York Tow Boat Exchange, Ocean Officers' Conference (composed of captains, mates, pilots, engineers and radio telegraphers), Atlantic Coast Shipbuilders' Association, Neptune Association, American Bureau of Shipping, Board of Port Authority, Mississippi Valley Association, Los Angeles Chamber of Commerce, San Francisco Chamber of Commerce, American Marine Association. Speakers at the meetings will include prominent government officials, congressmen and leaders of maritime organizations.

Monday, November 6, has been designated as shipowners' day at the exposition. The quarterly meeting of the American Steamship Owners' Association will be held that day, probably in the morning, leaving the afternoon and evening free for exposition activities.

F. B. Dalzell, Jr., has been appointed chairman of the committee to represent the Maritime Association during the week and to prepare and arrange for their three booth exhibit at the show. Mr. Dalzell will also handle the program of activities for the New York Tow Boat Exchange.

The Ocean Officers' conference will hold a joint meeting in the auditorium of the Grand Central Palace during the week.

One day will be designated as National Merchant Marine Association Day, at which time the Washington delegation representing this association will come to New York.

The American Society of Marine Designers is planning a meeting during the week and may invite the Philaelphia section to participate.

* * *

The American Marine Association has announced the appointment of John A. Hense, eastern manager, Northern Fire Apparatus Company, as chairman of the transportation committee. Mr. Hense has transportation problems well under way with railroad officials and application has been made to the Trunk Line Association for reduced fare rates for all members of the various societies mentioned above who will attend the American Marine Association Exposition and any other activities of "American Marine Week." The transportation committee also will have a consolidated railroad ticket office at the exposition itself and all delegates will obtain both railroad and Pullman tickets and make all necessary railroad and steamboat reservations for their return trip without leaving the building. The committee will also maintain a highly organized sight-seeing and tourist service for delegates in order that they may visit the more important points of interest in and about New York without loss of time.

# Pacific Marine Review

The National Magazine of Shipping

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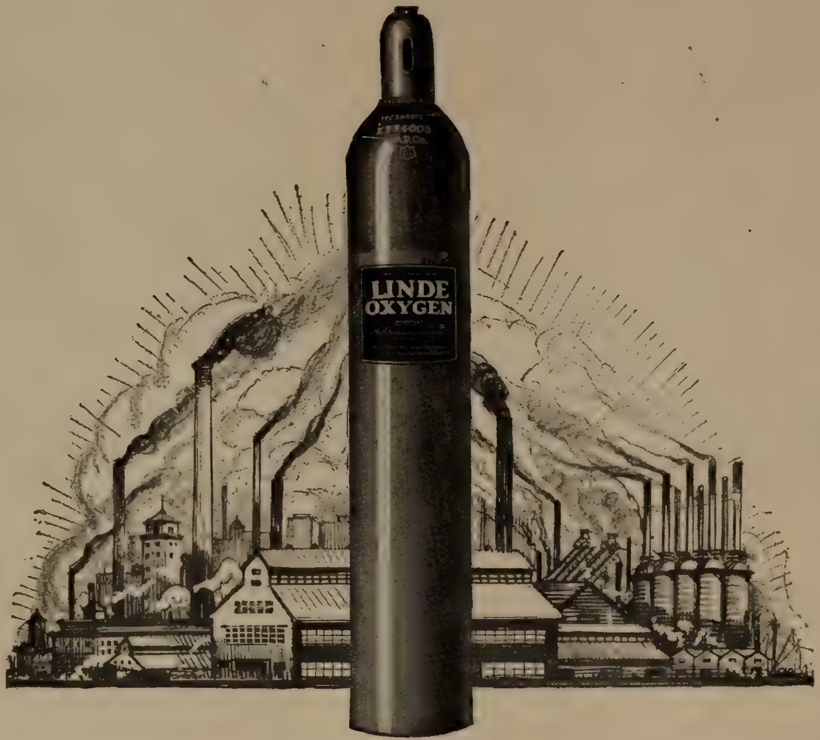
Pacific Marine Review, Vol. 19, No. 11. Published Monthly at San Francisco. Entered as second class matter at the post office at San Francisco under the Act of March 3, 1879. $2.00 a year.



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# Pacific Marine Review

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J. S. HINES
Publisher

A. J. DICKIE
Editor

ANDREW FARRELL
Associate Editor

B. N. De ROCHIE
Business Manager

PACIFIC MARINE REVIEW,
THE NATIONAL MAGAZINE OF SHIPPING
576 Sacramento Street, San Francisco

339 at No. 30 Church Street,
New York City

500 Citizens National Bank Building,
Los Angeles

Official organ of the Pacific American Steamship Association

Entered as second class mail matter June 20, 1913, at postoffice, San Francisco, under the act of March 3, 1879.

Subscription price, a year (domestic) ........ $2.00
(foreign) ........ 3.00
Single copies ........ .25

Published on the fifteenth of each month. Advertising forms close on the tenth and editorial forms on the twelfth.

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By their men and their ships and their overseas trade."

—*Hayes.*

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Pacific Marine Review
The National Magazine of Shipping
*November, 1922*

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## The Doctor Should Act

FOR the six-month period January-June, 1922, the total commercial traffic through the Panama Canal was 5,787,493 tons, as against 5,097,417 for the last six months of 1921. During the month of May, 1922, Suez Canal cargo surpassed that of May, 1921, by 770,000 deadweight tons; and the tonnage passing the canal was equal to that of May, 1912, the previous record month. Inasmuch as Panama and Suez are the pulses of world commerce, these indications of improvement in shipping are quite conclusive.

What of the situation of American shipping in these times of improvement? Very discouraging. During the fiscal year 1921-1922, says a statement issued by the Shipping Board, the total waterborne commerce of the United States was 80,250,000 long tons, of which foreign vessels carried 48 per cent, Shipping Board 14 and private American 38. But Great Lakes traffic accounted for 12,000,000 tons, 31 per cent of which was in foreign bottoms and 69 in American. If this amount be deducted, our ocean commerce was 68,000,000 tons. But of this 25,500,000 tons was oil in bulk, foreign vessels carrying 25 per cent, private American tankers 65 and Shipping Board craft 10. The result is that our salt-water general cargo traffic was 42,500,000 tons, of which 67 per cent went to foreign bottoms, 19 to Shipping Board and 14 per cent to privately-owned American ships. Still another deduction remains to be made. Our trade with Canada, the West Indies and Central America, which, as the board's review says, "is practically coastwise," amounted to 7,250,000 tons, divided 51 per cent to foreign tonnage and 49 to American. What then remains to be classed as overseas general cargo, the carriage of which "is the measure of our success upon the sea?" Only 35,250,000 long tons. Of this, foreign vessels carried 70 per cent, Shipping Board 22 and privately-owned American tonnage 8 per cent.

These figures are discouraging but not disheartening. If the symptoms compel the physician, Congress, to prescribe proper remedies, the illness will not have been without its compensations.

## The American Bureau

DATA forwarded by Stevenson Taylor, president of the American Bureau of Shipping, to Commissioner Meyer Lissner of the Shipping Board, in rebuttal of statements regarding the relative standing of the American Bureau and Lloyd's, should receive much publicity. They show what headway the American Bureau has been able to make within the last few years.

"We submit herewith a careful analysis of the facts, based on data given in Lloyd's Register as well as in our own Record," wrote Commander Taylor. "These figures are correct as of July 1, 1922, for privately owned American flag merchant vessels of over 1500 gross tons.

| | |
|---|---|
| American Bureau (single class) steel vessels | 753,830 |
| British Lloyd's (single class) steel vessels | 1,371,772 |
| American Bureau and British Lloyd's (dual class) steel vessels | 1,059,698 |
| British Corporation (single class) steel vessels (surveyed in this country by the American Bureau) | 135,000 |
| Bureau Veritas (single class) steel vessels (about) | 100,000 |
| **Comparing American Bureau and British Lloyd's** | |
| American Bureau (single class) | 753,830 |
| American Bureau and Lloyd's (dual) | 1,059,698 |
| Total bearing American Bureau class | 1,813,528 |
| British Lloyd's (single class) | 1,371,772 |
| Lloyd's and American Bureau (dual) | 1,059,698 |
| Total bearing British Lloyd's class | 2,431,470 |

(All of the above figures in gross tons.)

"Therefore, of the total tonnage of American privately owned seagoing steel ships, singly and dually classed combined, the American Bureau has 42.7 percentage and Lloyd's Registry 57.3 percentage; and be it noted that not included in these percentages are the classed steel vessels on the Great Lakes (all practically in the American Bureau), nor the classed wood and sailing ships under the American flag. Were these included it would be found that the majority of all privately owned American flag ships are classed by the American Bureau of Shipping."

## The Poor Railroads

WHEN Roger W. Babson, the well known statistician, painted a gloomy picture of the future of those railroads that must bear the brunt of competition of motor trucks in short hauls, he lent the prestige of his authority to what irresponsible automobile press agents have been dinning into the ears of the public for three years or more. The publicity gentlemen scarcely could be taken seriously; Mr. Babson must be.

But it is difficult to understand why Mr. Babson has overlooked the extremely rigorous competition that the long-haul railroads, especially the east-and-west transcontinental lines, must endure from intercoastal shipping. In the fiscal year 1921-1922 intercoastal cargo moving through the Panama Canal was 2,562,527 long tons, an enormous gain having been made over the 1,372,388 tons of the preceding fiscal year. Much of this cargo doubtless was developed by intercoastal shipping; it would not have moved by rail in any circumstances; but most of it is a direct loss to the transcontinental lines.

Now if the railroads are forced to surrender short-haul business to the motor trucks they have suffered doubly, for they thereby lose their one opportunity of meeting low steamship rates, that is, by quoting long-haul tariffs just sufficient to offset their "out-of-pocket" costs and falling back upon short-haul business for their profits. If Mr. Babson and steamship proponents are both correct the only business remaining to the railroads will be the moderate haul, too long to attract the truck and too short for the steamship.

The proper coordination of railroad, steamship and truck in the solution of the transportation problem of the United States needs the brain of another James J. Hill. None is visible on the horizon today.

## They Sign an Armistice

BOTH the Pacific Westbound and North Atlantic-Far East conferences have been reorganized under a plan that provides for the posting of a $25,000 bond by each member, guaranteeing the maintenance of freight rates. This scheme has been urged vigorously for several months, but it met with much opposition, and only a disastrously low level of rates availed to bring about its adoption. Its success will be proved or disproved by time alone, but it does appear that any company that would cut rates secretly when no forfeit was posted would do likewise in the present circumstances provided only that the expected gain were great enough to compensate for the forfeiture of $25,000. Another factor making against success is that some lines, principally Japanese, have declined to join the reorganized conference or have pleaded the necessity of referring the question to their head offices. The importance of this is evident, for any considerable amount of tonnage outside the conference must be sufficient to disturb rates.

The fact is that the only conferences that have been able to maintain even a semblance of authority during the shipping depression are those that grant deferred rebates—precisely the conferences that are tabu under American law. Even such strong organizations as these have been compelled more than once to make peace with a competitor by admitting him to their ranks.

Such are the elements unfavorable to success of the reorganized bodies. But on the other hand there exist a hearty dislike for further expensive rate wars and a slowly increasing volume of overseas cargo, both of which will tend to keep tariffs firmer. There is certain to be a struggle between these opposing elements, although either side will have reason to consider itself fortunate if it wins more than a partial victory.

## Wooden Steamers Again

ALTHOUGH the Shipping Board, in selling to a Pacific Coast syndicate 226 wooden vessels, disposed of practically its entire wooden fleet, there is more than one sign to indicate that the maritime world has not heard the last of the craft. In executing his agreement with the board, William F. Humphrey of San Francisco, representing George D. Perry, the successful bidder, bound himself to "the understanding that there will be incorporated in the bills of sale the condition that the ships shall not be operated as steamships and will be promptly dismantled as such." Nevertheless, Mr. Humphrey is quoted in the newspapers as saying that he is considering transferring the engines from some of the newly purchased vessels to seventy-five wood hulls bought several months ago on which there was no restriction as to use; and from Portland, Oregon, comes an interview with a member of the syndicate that made both purchases, in which the statement is made that the wood steamers can be used elsewhere than on regularly established routes.

Here is the setting for a neat argument. What if the syndicate were able to transfer engines from its recent purchases to the other hulls? There is no doubt whatever that, in such an event, the plain intent of the Shipping Board will be invalidated, in that wooden vessels, acquired at an extremely low cost, can compete with steel steamers of the E. F. C. and private owners. But does it necessarily follow that the wood vessels can compete successfully, even though commerce is improving? The situation is extremely interesting; that much is certain.

## Sir Frederick Lewis' Address

WHEN Sir Frederick Lewis stated at the annual meeting of Furness, Withy & Company that British shipping interests were conducting no propaganda against "the growth and development of the United States mercantile marine" he did a great deal to clear the air of poisonous suspicion. But Sir Frederick, if he reads the journals of the United Kingdom, cannot deny that someone is conducting a vigorous campaign both in Liverpool and Washington, and he cannot blame the people of this country for attributing it to British shipowners. Aside from that aspect of the question, Sir Frederick has contributed greatly toward better feeling here in the States and he has made clear just what British shipowners find to criticise in the pending Subsidy Bill.

"If the citizens of the United States consider that the payment of a subsidy is the best method by which to establish and maintain their mercantile marine, and to encourage private ownership, and incidentally, perhaps, to rid themselves of a cumbersome national fleet, that is entirely a matter for them to decide, and time alone will show whether that policy is right or wrong; but the legislation which is at present being considered goes a great deal further than this in seeking to control and direct international commerce in favor of the vessels of the United States at the expense of all others," said Sir Frederick. ". . . The proposais . . . contain many discriminatory clauses which will be inimical to British shipping interests. It is proposed to grant preferential railway rates for cargoes carried on national vessels. It is proposed to grant rebates of income tax to shippers who send their freight by American vessels. It is proposed that a fixed percentage of emigrants brought into the country shall only be admitted by American steamers. It is proposed to double the tonnage dues, and while the increased dues will be levied upon American and foreign vessels alike, the increased revenue so derived is to be credited to the fund from which the subsidy is to be paid, so that in effect foreign vessels are to be made to contribute towards the subsidy payment by which it is hoped to build up and develop the United States marine. It is proposed to include the Philippine Islands in the coasting trade, although I believe it is an historical and economic fact that two-thirds of the industries of the Philippines were created with British capital prior to being taken over by the United States."

Sir Frederick's arguments might be answered in detail, but the American attitude has been made clear more than once. Time will tell whether Sir Frederick or Mr. Lasker is correct; in the meantime more unwise British interference will only aggravate the situation.

## John Bull, Keeper of Traditions

ONE who signs himself "Ancient Mariner" writes in this tenor: "Some months ago I noted an interesting article in Pacific Marine Review covering the history of the famous ship Glory of the Seas, in which it was stated that an effort was being made to prevent her hull from being broken up and to preserve it as an example of a first class American merchantman of the old school. I am sorry to hear that these efforts have proved futile and the old ship is no more. This lack of interest is in contrast to the action recently taken by our cousins across the water in connection with the famous Cutty Sark."

The Cutty Sark, according to advices from Liverpool, has been purchased by Captain Dowman of Trevissome, near Falmouth, for £3750. He will have her re-rigged, restored as far as possible, repainted in her original colors of black and gold, and will moor her at Falmouth, where she will be open to inspection and allowed, as Captain Dowman said, "to die a graceful death." The Cutty Sark was built at Dumbarton in 1869. After making herself famous in the China and Australia trades she was sold to Ferreira & Company of Lisbon in 1895, and during recent years has been engaged in trade between Rio de Janeiro, New Orleans, Lisbon and Africa.

It is a boast of many Americans that we as a people care nothing for tradition. Forgetting a glorious past is nothing of which one should be proud. Permitting every old American clipper to disappear is something of which we should be ashamed. The British do things better. Perhaps they occupy their unique place in world shipping of today because they have kept alive their old traditions and have not forgone sentiment.

## The Oceanic's Contract

NEWS comes from Washington to the effect that the Postoffice Department has extended for another six months the Oceanic Steamship Company's emergency contract for an Australian mail service, which would have expired December 30. In the meantime negotiations will continue between the company and the government looking toward the execution of a longer agreement. It is to be hoped that the postmaster general will make it possible for the Oceanic to continue. He has heard from more than one trustworthy source that the company must have a much larger payment than it had under the Ocean Mail Act of 1891 or would have under the Subsidy Bill; he has been told by United States Navy officials that the Oceanic vessels offer the only dependable communication between this country and American Samoa; his own common sense should tell him that mail service between the United States and Australia would be almost intolerably bad if the Oceanic were to suspend sailings. Finally, as Andrew Furuseth, president of the International Seamen's Union, has urged more than once, there is no reason whatever for confusing an adequate payment for mail service with a general subsidy measure. Postmaster General Work should execute a fair contract with the Oceanic, regardless of the fate of the Subsidy Bill.

## Coastwise Navigation Versus Deep-Sea

THE action of the Pacific Steamship Company in assigning two masters to assume alternate command of the fast steamship H. F. Alexander in the Pacific coastwise service should have considerable emulation. Here at length is a recognition of the essential differences between coastwise and offshore navigation. The deep-sea mariner has little enough to vex him nine days of ten, and he has, moreover, a week or more in port at each end of his route. The coastwise master is usually close to land, his vessel is exposed to fog and dangerous currents, his stay in port is short, with the result that he is in a state of high nervous tension most of the time and faces any unusual situation under a heavy handicap. In such circumstances it is not at all surprising that he should meet with relatively frequent mishaps.

## State Aid for Harbors

TWENTY per cent of the aggregate debts of the states of the Union, or $213,891,400, was incurred for waterways and harbor improvements, says "A National Survey of State Debts and Securities," published by the Bank of America, New York City. This is a large amount, absolutely and relatively, when one considers that education, highways, soldiers' bonus and such items claim their share of the total. Yet only six states of the forty-eight are listed as having issued bonds for waterways and harbors. They are: California, $13,083,000; Louisiana, $31,989,400; Maine, $650,000; Massachusetts, $12,393,000; New York, $154,800,000; Rhode Island, $976,000. But no less than twenty-eight states (three on the Pacific, six on the Great Lakes, nineteen on the Atlantic) are adjacent to deep water and have, therefore, either actual or potential harbor facilities. For the most part they do possess improved harbors, but the fact that no bond issues are outstanding indicates clearly that the burden of erecting and maintaining facilities has been thrown upon municipalities. Such a policy does not appear to be wise, for the people of an entire state or of an entire section of the country, for that matter, derive direct benefit from good harbors, and the burden should be distributed equitably.

# THE PROBLEM OF OCEAN TRADE ROUTES

## Captain Hibberd Suggests Dividing the Oceans into Zones and Apportioning Them Among the Nations According to Positions and Needs

By CAPTAIN I. N. HIBBERD*

THERE is no more important problem facing the commercial world today than that of so arranging oversea transportation that each nation may have its share of the business and at the same time avoid those commercial rivalries which not only rob the traffic of its just profit but are almost always the real cause of armed conflict between nations.

### Comparative Tonnages of Nations

One of the factors which has an important bearing on this question is the great increase in United States tonnage in the last eight years. At the opening of the world war the United States had six steamships in the trans-Atlantic trade and nine in the trans-Pacific trade, or a total of fifteen ships with a capacity of 155,000 gross tons. This did not include ships engaged in the intercoastal trade or those running to the West Indies or Mexico. Today she has 1447 ships with a gross tonnage of 6,345,091 tons suitable for trans-Atlantic and trans-Pacific trade, and in addition has the same tonnage available for trade with the West Indies, Mexico and intercoastal points that she had in 1914. We see, therefore, that the United States today has 1432, or 100 times as many ships, with a gross tonnage of 6,190,091 tons, available for foreign service, as she had in 1914, and in consequence is confronted with an entirely new shipping problem.

Furthermore, not only the United States but all the nations of the world who have ships engaged in ocean traffic are finding readjustments necessary. When you consider that the world steel tonnage in 1914 was 42,514,000 tons and that today it has increased to 54,217,000 tons available for the same service, coupled with the fact that there is less cargo to be had now than in 1914, it is clearly apparent that there must be much loss by reason of competition, duplication of service and other dislocation of trade conditions unless there is some agreement between the nations of the world for an apportionment of the ocean carrying trade.

### Insufficient Cargoes Available

The destruction and waste resulting from the World War were beyond calculation, and the complete suspension of the overseas commerce of many of the European nations during hostilities aggravated the situation. We would naturally expect, therefore, that there would be enough cargo available to supply all the tonnage that could be furnished, now that there is no longer any likelihood of governmental interference with the merchants of the different countries in their efforts to re-establish trade relations with one another.

Actual experience, however, proves that this is not the case. The purchasing power of the European nations is reduced to the minimum, and no matter how badly people may need goods and supplies, those who have them are not willing to give them up unless the seeker has something of equal value, either money or goods, to give in exchange therefor. This situation in miniature prevailed in San Francisco after the earthquake and fire in 1906, and the people of that city were compelled to do without many things they wanted because they had nothing to offer in exchange until such time as they could, by working and saving, place themselves in a position to satisfy their needs. It would seem that a similar situation, though in far larger degree, is facing the world today. While the demands and needs are many times greater, so are the available resources. San Francisco solved her problem and I feel sure that the nations interested in the one we are now considering will do likewise.

These facts are known to all of you and are only called to your attention in order that you may have them in mind when considering the suggestions offered here, which it is hoped may help lead the way to a solution of the present world problem.

### Outline of Plan

The most constructive plan is that of dividing the different oceans into trade zones and apportioning them among the various nations according to their geographical position and commercial needs so as to give the best results for the effort expended. So far as the proportions suggested in this paper are concerned they are intended to apply solely to freight entering and clearing from United States ports.

There are three elements controlling the subdivision of ocean carrying trade into zones.

First, the size of the present carrying fleets. This is given in the introduction to the plan. Men with practical experience and knowledge of the problems who have given the subject much thought have agreed that in order to provide a properly balanced fleet, the United States should have a tonnage sufficient to care for 35 per cent of her exports and imports. This will give her a fleet large enough to care for her minimum commercial needs and provide sufficient transports, colliers and supply ships to furnish the necessary auxiliaries for possible military purposes, and it is on this basis that the proportions given here are founded.

Second, an influence to be considered in such a subdivision is the natural and logical desire of each carrying nation owning a fleet to protect its commerce and transport a reasonable part of this in its own bottoms. A careful analysis of world trade will be necessary in finally establishing a fair proportion for each of the nations interested.

Third, a further element which must be reckoned with in such a plan is the logical political trade expansions growing out of the World War and the peace treaty of Versailles, by which Great Britain and France have acquired much greater influence in Africa than they formerly possessed in that continent. In fact their future trade and political development was marked out for them by that treaty. Africa will for centuries to come be under European influence and South America has become and logically always will be closely affiliated with North America. This later situation is also very largely the result of the Versailles treaty.

The situation in Asia is as yet unsettled. All the great carrying nations have ambitions for future trade and political development with those countries. These international political and trade problems are of great importance and can never be wholly ignored in any conference looking to a solution of the difficulties of world commerce.

### Division of Trans-Atlantic Traffic

In arranging for a division of zones the first one to be considered is that of the two Atlantics.

This plan would give to the nations of the world, other than the United States, 70 per cent of the ocean carrying trade to and from the Americas in the two Atlantics, the Mediterranean and the Indian Ocean to the 95th degree of east longitude, in proportion to the tonnage of their respective fleets and the volume of their commerce with those countries, based on the figures shown at the beginning of the war. The remaining 30 per cent would go to the United States, and is a reasonable amount to apportion to her for the establishment of such passenger, mail and express lines as may be needed in building up her foreign trade.

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* Paper read at the Pan-Pacific Commercial Congress, Honolulu.

A glance at the map will at once make clear the advantage European nations would have in such a division, especially when you consider that they have the ships, the trained men to man them, financial establishments in all of the countries indicated, and commercial establishments on shore with suitable business connections both to furnish and dispose of the cargoes taken from and brought to their shores. Previous to the war the United States had practically no ships in these waters or financial establishments in the countries bordering thereon, and most of the vessels that are there now are receiving a certain amount of assistance from the government of the United States. The number of American financial institutions in these countries is also limited, but these will undoubtedly be increased in the future sufficiently to care for all the trade requirements between the two Americas.

On the Pacific side the situation is reversed. The ships of the nations of Europe have to make a voyage of 4500 miles before they enter the Pacific. There are relatively no more European ships in the Pacific than there are American ships in the Atlantic, and the same is practically true of their financial and mercantile arrangements on the shores of these oceans.

### Steamship Lines and Markets

The principal need of the American people is to establish fast passenger and freight lines to the various ports of the Orient, so as to give them a well balanced fleet and provide dependable transportation for the merchants engaged in developing markets in those countries.

Siberia, China, Indo-China, the Philippines and Java have a population more than five times as large as that of the United States, and while their purchasing power is low, it is going to increase very rapidly in the future when means of communication with other countries have been developed and when their standard of living is raised, as it inevitably will be by greater familiarity with the ways of other nations. It is evident that the Orient is the great market of the future for the United States, while, as previously mentioned, the African continent is tributary to the markets of Europe and can be considered the logical field for the development of the commerce of the European nations.

### American Fleet Necessary

In considering these problems there is one point which must be accepted as settled, namely, that the farmers, cotton-growers and other producers in this country will not again permit themselves to be placed in the critical position they were in during the World War, when they were unable to market their products because foreign ships were diverted to handle the carrying trade of their respective countries. The people of the United States, having built a fleet to protect their interests during that period, are determined that they will not sit idly by and see this tremendous asset lost, when by intelligent use it can be made so valuable in developing foreign trade, because that trade is something which the country must have if its various agencies of production are to be fully utilized.

The Pacific Ocean offers the best field for developing a trade which will keep a sufficient number of these ships employed to satisfy the minimum needs of a well balanced fleet for the United States. This development can be best brought about, with the least loss to the nations of the world, by apportioning the greater part of the activities of the Pacific Ocean to the two nations most concerned in the development of that ocean from a maritime point of view, namely, the United States and Japan.

### Division of Trans-Pacific Traffic

A fair division of the traffic of that ocean to and from both the Americas would be the apportionment of 50 per cent to the United States, 30 per cent to Japan, and the balance to the various other maritime nations of the world.

This division would affect the North and South Pacific and the eastern seas as far as the 95th degree of east longitude, and would cause very little dislocation of existing conditions. An exception should be made of the trade between Australia and England, which is a separate unit belonging to those two countries in which other nations have very little interest.

### The Nations Should Confer

The plan as outlined is not perfect and it will cause embarrassment to some of the individual lines, but it will serve as a basis for discussion at a conference of the nations interested, where a solution will be found which will help to avoid useless competition and place the ocean carrying trade on a stable basis.

Previous to 1914 a large part of the trade of the North and South Atlantic was apportioned to the different lines by various conferences, on at least one of which a government-owned United States line was represented. Some such procedure would be necessary to carry into effect the plan here suggested. In order to avoid criticism it would be well to have the distribution supervised by a conference composed of representatives from each of the countries interested, and the portion to which each was entitled divided among the different lines of that country by a conference of its own nationals.

By working out this scheme in detail, which it will not be difficult to do, the different world markets can be preserved for this country and the ships of other nations can handle our raw products at a price which will make those nations willing to trade with us and thus prevent them from concentrating their efforts in developing markets and sources of supplies in other countries. Personally, I feel sure that this would be the result if the subject were handled by a group of men who were really concerned with finding the most satisfactory solution of a difficult situation, for while some few individuals might suffer, world shipping in general would gain in many ways.

When you consider the serious problems that were disposed of at the Disarmament Conference in Washington, problems that involved such tremendous interests and for the solution of which such great sacrifices were made, it does not seem unreasonable to suggest that the difficulties that would confront a commercial conference should be easily disposed of. And there is every reason to believe that an international adjustment of traffic conflicts would be followed by the same increase in harmony and friendliness in the commercial world that has been so apparent in that larger field affected by the conference held at Washington, and would thus make for that permanent peace which we all so much desire.

# RADIO FOG-SIGNAL STATIONS

## Lighthouse Service Will Make Seven Installations When Apparatus is Received. Requests $25,000 Appropriation of Congress for Four More.

SHIPOWNERS of the United States realize, or are rapidly beginning to realize, the enormous importance of radio signal installations of the lighthouse service. Recent successful demonstrations of the Kolster radio compass, the unqualified indorsement given it by the American Shipmasters' Association and the equipping of the Admiral Line's steamship H. F. Alexander with the apparatus are straws showing the direction of the wind on the Pacific Coast. That this section of the country should take an increasing interest in radio fog-signal installations is to be confidently expected, inasmuch as fog prevails over almost the entire Pacific Seaboard during the winter and, to a less degree, in summer as well.

But shipowners, in spite of their awakened interest, still have much to do before they will have performed their full duty. There is too much of a tendency to defer installations on board ship until the lighthouse service has made installations on shore or on light vessels; perhaps there also is a failure to recognize that the unmistakable drift of this country is toward the installation of direction finding apparatus on board ship and not on shore, in other words, that there is little likelihood of reversion to the method of two or more land stations taking bearings of a vessel, plotting her position and advising her of the result. As F. W. Dunmore, associate physicist, bureau of standards, urged in a paper published in the July issue of Pacific Marine Review, the proper place for apparatus is on board ship in the hands of the navigating officer.

### Existing and Proposed Stations

At the first of October the lighthouse service had six radio fog-signal stations in operation as follows: Fire Island light vessel, New York; Ambrose Channel light vessel, New York; Sea Girt light station, New Jersey; relief light vessel No. 78, third district; Diamond Shoals light vessel, North Carolina; San Francisco light vessel, California. In addition to these existing installations, the following were to be made as soon as apparatus was received: Boston light vessel, Massachusetts; Nantucket Shoals light vessel, Massachusetts; Cape Charles light vessel, Virginia; Cape Henry light station, Virginia; Swiftsure Bank light vessel, Washington; Columbia River light vessel, Oregon; Blunts Reef light vessel, California.

Now comes the little known fact that the lighthouse service has had no special appropriation for this work, but has made installations from funds saved from other operations. Shipowners who are inclined to be impatient might ponder this. Further extension of the system of radio fog signals will depend, of course, upon funds available, and also, directly and indirectly, upon the interest taken and the use made of signals by shipping. It is manifest that one of the best means of obtaining more shore installations is to put radio compasses on vessels, for thereby an unanswerable argument will be brought to bear upon Congress; and the compasses, moreover, will be available for use in waters already protected by fog signal stations.

### Funds Are Requested

In addition to displaying their own readiness to install compasses, shipowners should lend support to the modest request of the lighthouse service for additional funds. The following estimate for additional radio fog signals is included in estimates for the lighthouse service to be submitted this year:

"No. 5. Radio fog-signal installations.—Installation and development of radio fog signals at or near lighthouses and light vessels, $25,000.

"Note.—The greatest need at the present time for increasing the safety of navigation is for more efficient fog signals. The development of radio apparatus and of means of accurately obtaining the direction of radio signals with the radio compass prove that radio apparatus is of great value for the location of ships in fog, thick weather, or beyond the range of visible signals. This item is for the purpose of further applying radio signals to this important work of the lighthouse service. This apparatus consists of a radio-sending station at a lighthouse on shore or on a light vessel at sea from which definite signals are sent out at regular intervals in the same manner as from a whistle or bell. The signals are, however, picked up on shipboard by means of a radio compass, an instrument which gives the direction of the source of the radio signal. This system has many advantages, some of which are: (1) It is capable of easy installation and operation without any additional personnel; (2) it requires no knowledge of radio apparatus or the telegraph code for its use; (3) any number of vessels at sea may obtain their position without interference in the minimum amount of time; (4) it permits the navigator to take his own bearings without depending on others for accuracy, thus placing the responsibility for the safe navigation of the vessel where it properly belongs. It is proposed to establish radio direction signal stations at the most important harbor entrances and other prominent points on the Atlantic and Pacific coasts. Detailed estimate:

| | |
|---|---|
| "Installation of four stations at $6000 | $24,000 |
| "Contingencies | 1,000 |
| "Total | $25,000 |

### Bureau's Broader Policy

The following extract from "Radio Fog Signals," by George R. Putnam, commissioner of lighthouses, outlines the broader policy of the service:

"The lighthouse service proposes, as means are available and needs are developed, to install similar groups or single radio fog-signal stations in the vicinity of important entrances on the Atlantic and Pacific coasts of the country and on the Great Lakes, as well as on some of the principal intermediate capes and light vessels. For the successful utilization of the system it is, of course, indispensable that the more valuable vessels at least be equipped with radio compasses, and it is believed that the additional safeguards resulting from such equipment will bring this about, particularly in view of the growing familiarity with the value of radio apparatus to shipping. As a result of further investigation still in progress by the services mentioned and others, and of actual test and experience, it is expected there will be improvements in this system and further applications of radio signaling for the safeguarding of navigation. It is not probable, however, that as a result of anything now in sight the extensive system of sound fog signals, such as sirens, whistles, horns and bells, can be dispensed with, as these are of great value to vessels and boats of every size and description, many of which are not likely to be equipped for receiving radio signals; and furthermore, these furnish warning signals the use of which is not dependent on the operation of any instrument other than the human ear.

"It may be desirable to develop this system for the location of vessels in clear weather, at distances beyond the visibility of lights or other objects on land, and this may readily be done if sufficiently useful."

### No Extensive Use on Commercial Vessels

The lighthouse service has been interested for a number of years in the possibilities of radio for use as a fog signal. A few years ago the bureau of standards actively took up the subject of the development of a practical radio compass for use on shipboard, and the present work of the lighthouse service is the result of the co-operation of the bureau of standards with it, applying these investigations to the radio compass on shipboard and the automatic signaling device for the lighthouse and lightship stations. While satisfactory results have been obtained with the radio compasses installed on vessels of the lighthouse service, they have not as yet been extensively placed on commercial vessels, nor widely tested on such vessels. Radio compasses of the Marconi system are now installed on a number of British and other foreign vessels, and satisfactory results are being reported, and several companies in this country are now developing radio compass apparatus, and vessel installations are being made. The lighthouse service believes that further development and thorough test of this means of aiding navigation in fog are amply warranted by the great prospective value of this system. The prospects are that the use of the radio compass on shipboard will prove to be one of the greatest advances made in safeguarding navigation, because it for the first time places within reach of the navigator a means of taking accurate bearings from invisible signal stations, and also bearings of other vessels, and of vessels in distress.

### In Time of Distress

Use of the radio compass in locating ships in distress may be of much greater importance than is generally understood. One instance, cited by the Lighthouse Service Bulletin, will serve: On the night of March 15 (1922) the British steamer Lord Strathcona lost her propeller in a rough sea and sent out signals of distress. The American steamer W. M. Burton was assigned to her assistance, but upon arriving at her given position no signs of the vessel could be seen. The captain on the disabled ship had no sight for a couple of days and was uncertain of his position. The visibility was very poor at the time and nothing could be seen further than one mile. The British ship Cassandra, which had a radio compass in its radio equipment, gave the bearing of the two ships from her position and very shortly afterward the steamer Lord Strathcona was sighted.

The different stations, the Radio Service Bulletin explains, are identified by the characteristics of the signals. Thus, Ambrose Channel sends one dash, Fire Island a group of two dashes, Sea Girt a group of three dashes, and San Francisco a group of two dashes, with brief intervals between the groups. The particular station on which a radio bearing is being taken in a fog is by this means just as definitely known as is the light on which a sight bearing is taken by the navigator of a ship identified by its color of flashes or color. The signals are operated continuously during thick or foggy weather, and also at the present time they are sent each day from 9 to 9:30 a. m. and from 3 to 3:30 p. m., so as to permit any vessel equipped with radio compass to try out the method and apparatus in clear weather. To avoid continuous interference between the signals themselves, they are sent on different time schedules, as follows: Ambrose send for 20 seconds, silent 20 seconds; Fire Island sends for 25 seconds, silent 25 seconds; Sea Girt sends for 60 seconds, silent 6 minutes; and San Francisco for 30 seconds, silent 30 seconds. The signals are repeated rapidly, Sea Girt, for example, sending over 40 groups of dashes a minute.

### 1000-Meter Wave Length

The transmitting apparatus now in use is a commercial panel type transmitting set of simple and rugged construction of about one-kilowatt power. In addition to this set a special automatic motor-driven timing switch for producing the desired signal at regular intervals is provided. The antennae at the transmitting stations are the same as used for ordinary communication. The wave length used at present is 1000 meters, the present international standard for such signals, and the range of usefulness varies from 30 to 100 miles, depending upon the sensitiveness of the receiving apparatus.

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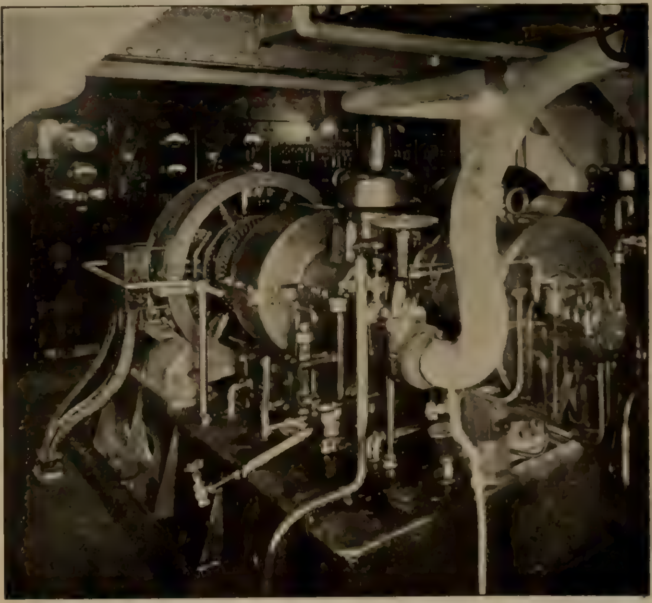
## NEW TURBINE GENERATOR SET FOR AUXILIARIES

WHEN the steamship President Taft arrived at San Francisco recently to go on the Oriental run for the Pacific Mail Steamship Company, it was found that she had just been equipped with new auxiliary sets. The new equipment includes two 100-kilowatt and one 50-kilowatt unit, one of the former being shown on this page.

These sets are the product of the Westinghouse Electric & Manufacturing Company and embody new points of design that should satisfy the most exacting critic. The 100-kilowatt unit shown is assembled on an unusually large bedplate of girder construction, insuring perfect alignment regardless of any ship movement. A positive acting automatic overspeed governor supplements the regular speed governor, which, combined with an additional feature to prevent speeding, makes this the safest unit on the market.

The use of the gear, which operates particularly quietly, permitted entire freedom in the selection of turbine and generator speeds, resulting in a very efficient set having low steam consumption. The gear teeth as well as the bearings are lubricated automatically from a reservoir in the gear case. A constant oil temperature is maintained by a cooling coil in the oil reservoir.



One of two new Westinghouse 100 k. w. generator sets on Shipping Board steamship President Taft, which is operated by the Pacific Mail.

# THE CELEBRATED CLIPPER SHIP RED JACKET

## This Handsomest of the Large Vessels Set the New York-Liverpool Record of 13 Days, 1 Hour, 25 Minutes, on Her Maiden Voyage

By F. C. MATTHEWS

THE extreme clipper Red Jacket was justly celebrated for the delicate beauty of her graceful lines throughout; her particularly handsome arched stem was as pleasing to the eye as was her powerful but exquisitely molded stern, while her spars and rigging were correctly proportioned. To the end of her days as a sailing ship she was everywhere considered as the handsomest of the large clippers set afloat by American builders. The view showing her in the ice off Cape Horn is conceded by authorities who knew the ship well to be a very correct representation, while the picture showing her under the British flag exaggerates the amount of rake to the mizzenmast. The rake of the foremast is given as having been one and one-third inches to the foot, while that of the mizzen was one and one-half. The masts of the Flying Cloud all raked alike, one and one-quarter inches to the foot.

### Built in Maine in 1853

The entrance lines of the Red Jacket were hollow and her ends were long and very sharp. She had three decks and her dimensions, according to Lloyd's Register, were: length, 251 feet 2 inches; breadth, 44 feet; depth of hold, 31 feet; draft, 22 feet; net, gross and under-deck tonnage were all the same figure, 2305 tons. She was built by George Taylor at Rockland, Maine, and was launched near the end of 1853; her designer was Samuel A. Pook of Boston, who had previously planned a number of fast and favorite clippers, notably Game Cock, Surprise, Northern Light, Ocean Telegraph and Herald of the Morning.

(The Thomas yards put out many fine vessels, one of which, the clipper Rattler, was very well known in the California trade and holds the sailing record from Callao to the Golden Gate, 28 days, made in 1878. The Rattler, then known as the British bark Martha, was broken up at San Francisco in November, 1889, after an eventful career of 37 years.)

### Her Maiden Voyage Still a Record

The principal owners of the Red Jacket were Seacomb & Taylor, although her builder retained an interest. She was sent from New York to Liverpool to try out her adaptability for the booming passenger and freight business between the mother country and Australia. Uncoppered and manned by a very indifferent crew, she sailed from New York January 11, 1854, and arrived at Liverpool on the 23d, the elapsed time from dock to dock being 13 days, 1 hour, 25 minutes, establishing a record that stands to the present day. The following were the runs in nautical miles daily, commencing with Wednesday, January 11: 103; 150; 265; 311; 217; 106; 125; 319; 413; 374; 342; 300; 371. The passage was made without the loss of a rope yarn, although much stormy weather was experienced, with snow, hail and rain. She ran 15 knots on the wind and 18 knots with the wind abeam. Captain Asa Eldridge, who was one of the most prominent of Western Ocean packet commanders and who lost his life with the Collins Line steamer Pacific, had the Red Jacket on her maiden voyage.

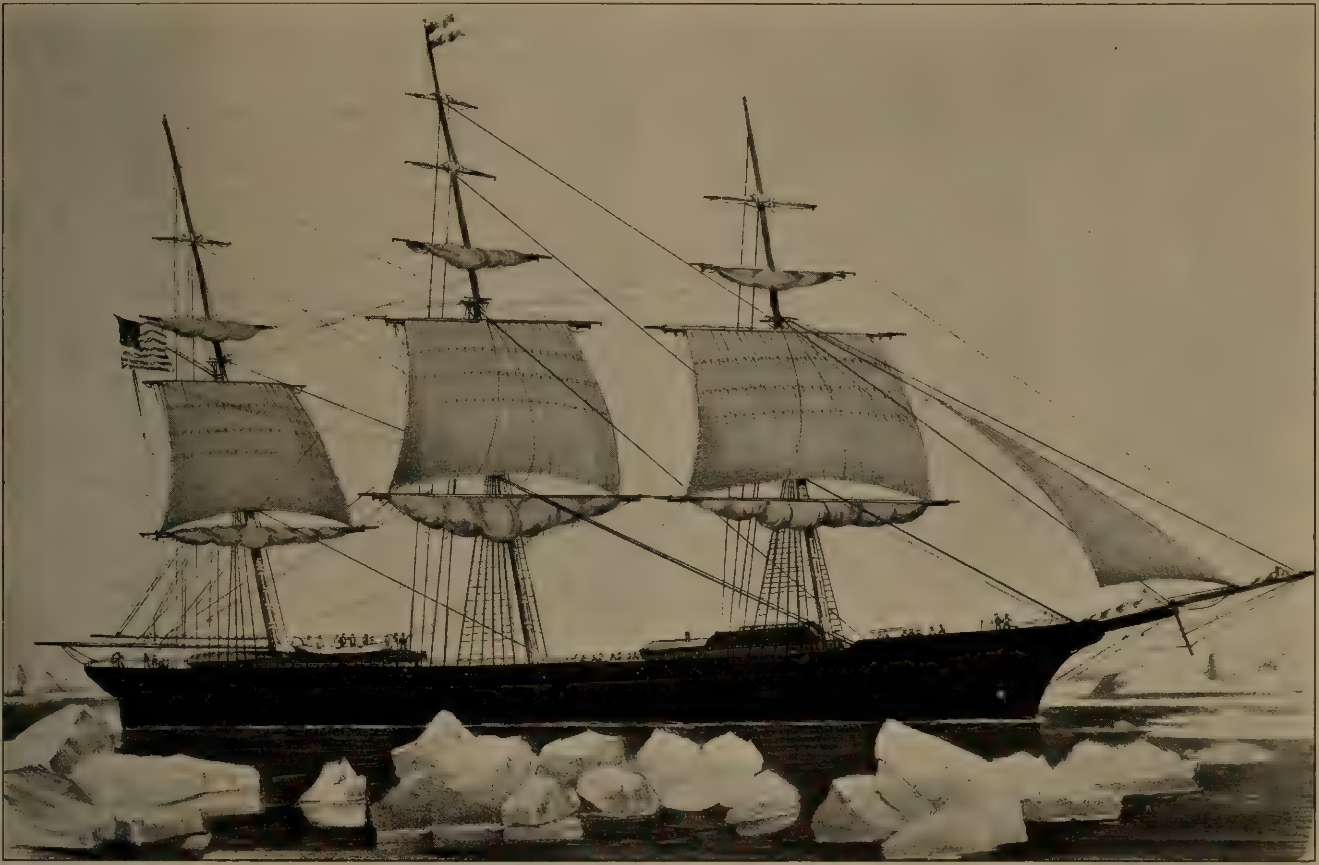
### As Australian Packet Sets New Record

At Liverpool she was immediately chartered by the agents of the White Star line for a round voyage to Melbourne. Under command of Captain Samuel Reid she sailed May 4, 1854, arriving out July 12. The entry in log of that date includes the following statement: "300 miles; fine weather; made King's Island at 10:50 p. m.; crossed the bar at 11:50 p. m.; passage from Rock Lighthouse to Port Philip Heads, 69 days, 11 hours, 15 minutes; under sail, 67 days, 13 hours; total distance ran, 13,880 miles." Her run from Liverpool to the Line was 25 days, due to light winds and very poor trades; in the South Atlantic the same conditions prevailed; crossed the meridian of the Cape of Good Hope in latitude 45 south June 24, 51 days out; running her easting down, went as far south as latitude 52 and had much cold weather with snow, hail and sleet, one log entry being: "entire forward part of ship covered with ice." Frequent notations are made of "high sea," "cross sea," "heavy gales," "strong gales and squalls," but the good clipper braved them all without mishap and fairly flew through the water, as the following runs for the last 17 days of the passage will show: 315 miles; 330; 263; 286; 287; 286; —; 313; 300; 288; 400; 299; 350; 357; 334; 245; 300. The run of under 19 days from the meridian of the Cape to Melbourne is believed never to have been equaled, much less surpassed. An inspection of the log of the Thermopylae on her much vaunted passage of 24 days from Gravesend to Melbourne (62 days from Lizard) shows that she was nearly 22 days from the Cape meridian to 12 miles from Cape Otway.

### 10,243 Miles in 42 Days

The Red Jacket had good dispatch at Melbourne, sailing August 3; rounded the Horn on the 23d, only 20 days out; crossed the Line 42 days out, having run 10,243 miles; thereafter practically nothing but calms and light winds were encountered and she did not reach Liverpool until October 15, 31½ days from the Line; total passage, 73 days. Total distance run, 14,863 miles; average, 202¼ daily; best day, 376. The daily average for the first week was 231 miles; second week, 307 miles; third week, 254; fourth week, 205 miles; fifth week, 237 miles; sixth week, 224 miles. During one whole week in the doldrums, the average was less than 100 a day, and the two following weeks, 142 and 106 miles only. The trip out and home had been made in 5 months, 10 days, 22½ hours, one week better than the voyage of the Marco Polo, which had been the record. On the homeward passage the Red Jacket was too light, but constantly showed her ability by logging 17 or 18 knots in fresh breezes, and 14 and 15 knots close hauled. She beat the British clipper Guiding Star 9 days; had 45,000 ounces of gold dust and about 28,000 sovereigns, of a total value of more than £200,000 sterling.

The passage out and home excited considerable interest, not only on account of its great and unprecedented speed but likewise on account of the dangerous position in which the vessel was placed in the ice off Cape Horn in August. The original of the accompanying illustration was made up from several sketches appearing in the Illustrated London News, the work of a passenger, one view depicting the ship entirely surrounded with field ice. The artist-correspondent-passenger described the voyage to the News as follows: "The homeward passage promised well until we had crossed the equator 8 or 9 degrees, the time occupied in making 52 minutes north latitude being only 42 days; we confidently anticipated a passage of 60 days, but it was frustrated by head winds and calms. The Red Jacket was not in good trim for sailing, being too light and much deeper aft than forward; she, however, often logged 17 or 18 knots in a stiff breeze and 14 and 15 close hauled. No extraordinarily rough weather was experienced, but we had a number of severe gales. On the 18th of August we were running under close-reefed main and fore-topsails, and fore-topmast-staysail, being the least canvas under which she was ever placed. A high sea was on. She never shipped any water worth speaking of, except on the 31st of the same month, while running before another heavy squall or gale, when she took water in, in one sea, at three places. She was carrying a good deal of canvas, having foresail and fore and main-topgallants set—no sail of the mizzen mast. The log shows the extraordinary amount of calms we had north of the Line—a whole week in one stretch; and even after, we had only a few days with anything like a breeze; the wind being adverse after the first week of calms until the 7th of October, driving us away to the westward as far as 43 degrees 3 minutes west.



Clipper ship Red Jacket in the ice off Cape Horn on her passage from Australia to Liverpool. From a lithograph published by Currier & Ives, New York

### In the Ice Off Cape Horn

"Regarding the ice: on the morning of the 24th of August I was roused out of sleep by the noise of shortening sail, and the lookout singing out, 'Land!' The ice had been seen some time before, but the solid masses were supposed, in the dark, to be land. On getting out, I found we were in smooth water, and large masses of ice floating around us. As the day broke, we found ourselves sailing along a lake of water, not unlike a canal. The ice seemed to extend on every side, in solid fields, as far as the eye could reach, without any prospect of getting out, so that we had to follow this channel. All sail was clewed up, except the topsails; and as there was a good breeze, we proceeded along at about four or five knots. Our situation at this time seemed most appalling, as we appeared to be getting further into the ice, so that by ten or eleven o'clock we were almost making up our minds to remain for weeks in this fearful situation. About noon the captain and second mate, who had been on the fore-topsail-yard all morning, discovered clear sea again; to gain which we had to force a passage through dense masses of ice and it was here that she sustained the principal damage to her stem and copper.

"We soon got clear, and the rest of the day saw no trace of ice and were very thankful we had got off so easy. But to our dismay, at eight p. m. we again fell in with it. The ship was put about and sail shortened for the night, and we ran back to the clear water in which we had been sailing. At daybreak sail was made; and at seven a. m. we came up to the ice. At first it was only large pans, much melted, the water having all the appearance of brine, and quite thick around them. Afterwards, large masses of broken icebergs presented themselves, and in guiding the ship through these, great difficulty was experienced. When it is considered that these solid masses have three times as much of their body under water as above, the danger can easily be imagined, it being almost as bad as sailing among rocks. Very large icebergs were also interspersed here, and visible all around. This day we cleared it about noon. Icebergs were still, however, seen, both near and in the distance, their appearance being most grand. One of the largest was thought to be about two miles in circumference and one hundred feet high. It was passed four or five miles distant on our starboard and lee side. We hove to again at night. Next day, Saturday, was for the most part, a dead calm, and we were carried back with the current; not a breath of wind; the day most beautiful; clear sky and pleasant, only the air sharp. Icebergs were, however, still seen. Next day, Sunday, we passed a number more, which was the last ice seen. One of these, about 200 feet high, was most grand and we cleared it on our port and windward side, a mile or less distant.

"The weather during this period was clear and fine; indeed, the day before encountering the ice was beautiful; a nice, light breeze, which heightened towards evening; sea smooth. We were running, close hauled, fourteen knots an hour steadily during the night. The sun had set in deep crimson, behind a bank of clouds over against Cape Horn."

### Under the British Flag

On arrival at Liverpool the Red Jacket was purchased by Pilkington & Wilson for the White Star line; reported price, £30,000 sterling. She continued as a regular packet in this line, in connection with the British or Colonial built clippers White Star, Shalimar and Mermaid for a number of years and was always a favorite with the traveling public. In 1855 her command was offered to Captain Anthony Enright, who had earned a great reputation for fast passages in the tea clipper Chrysolite, but James Baines & Company of the Black Ball Line of Liverpool-Australian packets offered Enright the Mackay clipper Lightning, which latter he accepted after holding out for, and finally being granted, a salary of £1000 a year. Captain Milward took the Red Jacket and had the satisfaction of beating the Lightning six days on the run out to Melbourne (75 against 81), September-November, 1855. The Red Jacket appears to have been a consistently fast passage-maker, generally around the 80-day mark, although it is stated that her wings were clipped in the late 50's and she was finally put into other business. In 1865 we find her running to Calcutta, and she also made some trips to New Zealand. In 1868 she is listed as owned by Wilson & Chambers of Liverpool; shortly thereafter she was again sold, and went into the timber trade between Quebec and London, and was so engaged as late as 1882. Eventually she, in company with the old Black Baller, Donald Mackay, went to Cape Verde as a coal hulk, and as one author states: "How many of the Union-Castle passengers knew, when they cast their eyes pityingly, or perhaps disdainfully, on the grimy looking hulk floating a cable's length or so away from their spotless liner, that they were looking upon a crack passenger ship of their grandfather's day."

### Shippers of Gold Dust Have a Scare

Caldwell, Train & Company were agents at Melbourne for the White Star Line, and George Francis Train, junior partner, had been appointed by Duncan Sherman & Company as their agent for the purchase of gold for shipment to London or New York, as circumstances permitted. Train was also the representative of the Boston underwriters in the South Seas. At the time the following incident occurred, the firm of Caldwell, Train & Company had been dissolved, and Captain Caldwell, the retiring partner, was to go to England in the Red Jacket. To quote Train's story: "It was of course customary to have all bills of lading signed by the ship's captain, but Captain Reid had been arrested at the instance of one of the passengers and the ship was libeled on account of a claim. In Boston I had often signed bills of lading in the absence of the captain, so that I had no hesitancy as to my course in this emergency. I considered that I had a perfect right to sign the bills, and so I did sign them for the $2,000,000 worth of gold dust, putting it 'George Francis Train, for the captain.' Now the English are a conservative people, and when they see anything new it 'frights' them. When the Melbourne banks saw that I had signed the papers, they were nearly scared out of their boots. They had never heard of such a procedure and thought that their insurance was gone. But this was not all. The Red Jacket was the fastest clipper that had then visited Melbourne, and it occurred to these bankers that I was going to run off with this gold and become a Captain Kidd or a buccaneering Morgan. They grounded their fears upon the facts that my wife was aboard; that Captain Caldwell, my partner and friend, was also a passenger, and they believed that Captain Reid was on board, although under arrest. To suspicious bankers, here was really a strong case against me.

"In the meantime, the Red Jacket, with her trim sails bellied with the wind, and sweeping along with a way of her own that nothing in the South Seas could imitate or approach, was passing down Hobson's Bay. The government and the Melbourne authorities dispatched two men-of-war after her. There was no possibility of her being overhauled by these craft, and I gave orders to make for Point Nepean. The sheriffs from Melbourne, who thought that Captain Reid was aboard, stayed on the ship, but I ordered them off at the Point. They were furious, but could do nothing, since they could not act for Melbourne at sea, under the Stars and Stripes. Accordingly they were put on a tug and taken back to Melbourne. Immediately after the sheriffs left the ship, a little yacht, the Flying Eagle, with Captain Reid aboard, came alongside, and the captain was put on the Red Jacket, just outside the jurisdiction of Australia. The Red Jacket caught the wind again and showed her clean heels to the slow-sailing men-of-war.

"The authorities and the bankers did not like the proceedings at all, but saw that they could do nothing. There was great anxiety in Australia for some months, but when it was learned that the $2,000,000 was landed in Liverpool without the loss of a farthing, I was heartily congratulated, although the British spirit never entirely forgave the taking of matters into my own hands and making the best of a bad situation. Their conservatism had received a bad shock."

### Reminiscences at Auckland

A once-prominent insurance manager of San Francisco some years ago told how well he remembered the Red Jacket and gave the following reminiscences: "About the year 1859 she was sent over from Port Philip to Auckland, presenting a beautiful picture, under the white star in red-swallowtail flag. There was but little freight offering at New Zealand for Liverpool, the bulk of the business being with London and only a light inter-colonial trade in lumber and sometimes potatoes and onions. Passengers were booked as long as four months ahead, waiting for celebrated clippers and favored commanders. Many families in the Colonies would entrust their friends to, and direct them to travel only with, certain captains, so great was the rivalry for entertainment, safety and speed. The Red Jacket was lying in the stream at Auckland and was much talked about. With two other youngsters, we being day students at Wesley College, I borrowed a boat and rowed out to the famous ship, passing around, admiring her beautiful entrance, clean running spars, yards trimmed, white duck sails and gaskets. We were afraid to ask permission to go on board, remembering former gruff rebukes from officers of other immigrant ships flying flags of foreign nations. We were, therefore, agreeably startled by a voice from the quarter deck announcing, 'Boys, do you want to come aboard?' 'Yes, sir, if you please,' was answered promptly, and a line thrown to us was quickly made fast. We were met at the gangway by a gentleman in a suit of light summer tweed, Panama hat, patent leather shoes, boiled shirt and flowing tie, who carried a goldheaded cane in his hand. After escorting us about the bright, clean main deck and down through the 'tween decks, we were invited into the saloon and asked if we would have some pie. Think of it, asking schoolboys if they would like pie! I can yet remember the delight of the entertainment. A colored gentleman was called. He cut the pie in quarters and laid out with it coffee, crackers and cheese, while the chief officer saw to it that we ate heartily and enjoyed the hospitality of his beautiful ship. We learned afterwards that, notwithstanding the shore togs of our entertainer, he was as smart a sailor in practice as he was in appearance, and because of the seamanship of the master and his officers, the Red Jacket was one of the favorite packets of the White Star Line of sailing ships to Australia and New Zealand in 1859."

### White Star and Black Ball Packets

To show what a factor the clipper ship was in Australian trade from the gold discovery until the latter half of the 50's, it may be stated that even the carrying of passengers and mails depended on the semi-monthly sailings of the White Star and Black Ball liners. A few spasmodic attempts had been made to start steam lines, but the poorly planned and mismanaged ventures met natural deaths, while the practical ones met their fate at the opening of the Crimean War, when all available merchant steamers were pressed into service as transports at very high rates. James Baines & Company, operators of the Black Ball Line (which had no connection with the Western Ocean Black Ballers) contracted with Donald McKay of Boston for the construction of four clippers to uphold their end in the competition with the White Stars, they to equal, if not to surpass, in sailing power, accommodation and general excellence anything afloat. They were the Lightning, James Baines, Champion of the Seas and Donald MacKay, the two former, with the Great Republic (also a McKay production) being conceded the fastest sailing ships the world has ever seen. The popularity gained by the Black Ball Line through the performances of its four American-built clippers was hardly as gratifying as though it had been the result of British models; therefore a grand attempt was made in the Schomberg to show the skill of British builders when on their mettle. This mammoth Aberdeen clipper was built in 1855 and the Messrs. Baines placed her in command of Captain Forbes, formerly of the Marco Polo and the Lightning, but unfortunately she was lost on her maiden voyage when near her port of destination.

The rivalry between the ships of the two lines was very great, and the arrival out of a White Star or Black Ball liner with the mails caused excitement proportionate with that attending the occurrence of the well known "steamer day" of early San Francisco history. In 1859, however, the new service of the P. &

## TABLE OF MAIDEN VOYAGES OF THE PRINCIPAL EARLY AUSTRALIAN LINERS

### INITIAL PASSAGES FROM AMERICA TO ENGLAND

| Name | Captain | Tons | Built at | Line | Voyage | Date | Passage ds. | Passage hrs. | Best day | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| Marco Polo | | 1625 | St. Johns, 1852 | Unattached | Mobile/Liv | | 35 | | 280 | |
| Sovgn. of Seas | McKay | 2421 | E. Boston, 1852 | Unattached | N. Y./Liv | June/July, '53 | 13 | 23 | 344 | Dock to dock |
| Red Jacket | Eldridge | 2460 | Rockland, 1853 | Unattached | N. Y./Liv | January, '54 | 13 | 1 | 413 | Dock to dock |
| Lightning | Forbes | 2096 | E. Boston, 1854 | Black Ball | Bos./Liv | Feb./Mch., '54 | 13 | 21 | 436 | Bos. Lt. to Dock |
| James Baines | McDonald | 2525 | E. Boston, 1854 | Black Ball | Bos./Liv | Sept., '54 | 12 | 9 | 342 | Bos. Lt. to R'k Lt. |
| Chmpn. of Seas | Newlands | 2447 | E. Boston, 1854 | Black Ball | Bos./Liv | June, '54 | 16 | | | |
| Donald Mackay | Warner | 2408 | E. Boston, 1855 | Black Ball | Bos./Liv | Feb./Mch., '55 | 17 | | 421 | 12 ds. to Cape Cl'r |
| Blue Jacket | | 1790 | Boston, 1854 | Unattached | Bos./Liv. | October, '54 | 12 | 10 | | Land to land |
| Shalimar | | 1557 | St. Johns, 1854 | White Star | St. Johns/Liv | October, '54 | 21 | | | |
| White Star | Kerr | 2339 | St. Johns, 1854 | White Star | St. Johns/Liv | November, '54 | 15 | | | |

### INITIAL PASSAGES TO AUSTRALIA

| | | | | Outward Passage | | | | Homeward Passage | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | Captain | Line | Voyage | Date | Time ds. | Time hrs. | Best day | Date | Time ds. | Time hrs. | Best day |
| Marco Polo | Forbes | Black Ball | Liv/Melb | July/Sept. '52 | 68 | | 364 | Oct/Dec '52 | 76 | | 353 |
| Red Jacket | Reid | White Star | Liv/Melb | May/July '54 | 69 | 11 | 400 | Aug/Oct '54 | 73 | 12 | 376 |
| Lightning | Forbes | Black Ball | Liv/Melb | May/July '54 | 77 | 12 | 348 | Aug/Oct '54 | 64 | 3 | 412 |
| Champn of Seas | Newlands | Black Ball | Liv/Melb | Oct./Dec. '54 | 72 | | | Feb/Apr '55 | 84 | | |
| Sovgn of Seas | Warner | Black Ball | Liv/Melb | Sept/Nov. '53 | 77 | | 1275(4ds) | Jan/Apr '54 | 86 | | |
| James Baines | McDonald | Black Ball | Liv/Melb | Dec'54/Feb'55 | 63 | 18 | 423 | Mar/May '55 | 69 | 12 | |
| Donald Mackay | Warner | Black Ball | Liv/Melb | June/Aug. '55 | 81 | | | Oct/Dec '55 | 86 | | |
| Blue Jacket | Underwood | Fox (London) | Lon/Melb. | Mch/May '55 | 69 | | | July/Sept '55 | 69 | | |
| Shalimar | Robertson | White Star | Liv/Melb | Nov'54/Feb'55 | 77 | | | Mar/Jun '55 | 75 | | |
| White Star | Kerr | White Star | Liv/Melb | Apr/July '55 | 79 | | | Aug/Nov '55 | 88 | | |

The discrepancy between the name of the ship, Donald Mackay, and the name of her builder, Donald McKay, for whom she was named, probably is to be explained by the fact that the Scottish form invariably is Mackay—in the clan's motto, its war-cry and tartan; whereas in America the name of the builder always appears as McKay—many times in the "History of East Boston," by W. H. Sumner, and in the Massachusetts Historical Society's proceedings. Lloyd's Register of 1874 gives the ship's name as Donald Mackay, adopting the Scottish spelling.

O. was commenced and as the contract time from England to Melbourne via Marseilles was only fifty days, this spelled the doom of the sailing lines; the Black Ball Line became financially embarrassed shortly thereafter; the White Star Line, which operated mostly chartered ships, continued until 1867, when the owners, Pilkington & Wilson, sold their house flag and goodwill to T. H. Ismay, who later, under the name of Ismay, Imrie & Company, continued in the Australian trade with iron sailing ships, and in 1870 commenced running steamers between Liverpool and New York.

### The Dreadnought Controversy

The figures in the accompanying tables have been obtained, in the instances of passages sufficiently fast to make the matter of hours important, from copies of abstract log books. It is not a list of the fastest passages of the vessels named, for many of them subsequently eclipsed the figures quoted; neither is it intended to be a list of record voyages in the particular runs described, although there are some instances in which the figures quoted are not known to have ever been beaten, such as in the case of Red Jacket, New York to Liverpool, 13 days 1 hour. There appears to be no question but that the Sovereign of the Seas was only 11 days, 11½ hours, from Sandy Hook to off Cape Clear on her passage in June-July, 1853, but the claim for the fastest eastward run from the United States, land to land, is made for the packet ship (not extreme clipper) Dreadnought, 9 days, 17 hours, from Sandy Hook to off Queenstown. The correctness of this claim has been denied by various authorities, including "The Clipper Ship Era," mainly on the ground that the claim was not made until after the death of Captain Samuels, and also that mention of it did not appear in his book, "From Forecastle to Cabin." The first contention is not based on fact, for the passage appears in various lists of remarkable runs in statistical books published fifty years ago; further, the Illustrated London News, of July 9, 1859, page 46, in epitomized column, has the following: "The packet ship Dreadnought, Captain Samuels, famed for her rapid passages across the Atlantic, arrived off Cape Clear on the 27th ult. in 9 days from New York." According to a booklet, now in second edition, entitled "The Dreadnought of Newburyport," by Francis B. C. Bradlee, published by Essex Institute, Salem, Massachusetts, Captain Samuels did claim making the run in the time disputed, certifying to that effect in a letter dated April 2, 1908, to John H. Morrison and appearing in his "History of the New York Ship Yards." It is true that on the passage under consideration, the Dreadnought was 13 days 9 hours from New York to Liverpool, but Captain Samuels stated that variable and light head winds prolonged the passage from Queenstown to Liverpool. Why some of the particularly strong objectors on the other side, who have not submitted a particle of evidence to back their opinion, do not make efforts to satisfy themselves by investigating the alleged landing of mails by a Cork pilot boat, as claimed by Captain Samuels, is a matter of curiosity, and until there is proof brought forward to the contrary, it would appear from all the evidence that the passage was made in the time stated, which would be a record to this date. The old packets had some very fast runs to their credit across the Atlantic, the Independence having made Cape Clear twice in 12 days from New York, and on one occasion was up with Lundy Island in the same time; in fact, the packets were well able to hold their own on this voyage against the clippers, although it must be considered that but a few of the latter were ever permanently on the run, making mostly odd voyages now and then.

### The Source of Her Name

Red Jacket, for whom the clipper was named, was a noted Seneca chief of the Wolf clan. In the American Revolution the Senecas reluctantly espoused the cause of Great Britain and Red Jacket, though strongly opposed to this course of his people, took the field. His ability and intelligence attracted the attention of the British officers, one of whom gave him a brilliant red jacket, which was replaced when worn out by a second, third, etc. He was often employed as a dispatch carrier, but was averse to fighting and for that reason was reproached with being a coward. He was also accused of being a robber, treasonable to the United States after signing a treaty of peace, and in every way his record is not at all that of a high-minded character, which so many cursory investigators give him. He was deposed as chief in 1827, but was subsequently reinstated. He was born about 1756 in Seneca county, New York, and died January 20, 1830, on the former Buffalo reservation of the Senecas, on lands now within the limits of Buffalo. In private life his name was Otetiani, probably meaning "prepared" or "ready"; on elevation to chiefship he received the name Sha-goie-watha (commonly spelled Sa-go-ye-wat-ha), literally "he who causes them to be awake," after the habits of the wolf, and without any reference to his ability as orator or otherwise. (Extracted from "Handbook of American Indians North of Mexico," by F. W. Hodge, Smithsonian Institution Bureau of Ethnology Bulletin 30.) The figurehead of the vessel was a full length carved representation of the chief.

The following description of the figure head of the Blue Jacket tells why she was so named: A man from the waist up, in old sailor's costume, a blue jacket with yellow buttons, the jacket open in the front, no waistcoat, loose shirt and large knotted handkerchief round the neck; with a broad belt and large square buckle and cutlass hilt at the side. On either side of the figurehead was a scroll, saying, "Keep a sharp lookout!"

The Blue Jacket left Lyttleton, New Zealand, homeward bound and was abandoned on fire off the Falkland Islands on March 9, 1869. Nearly two years later—or, to be exact, on December 8, 1871—her figurehead was found washed up on the shore of Rottnest Island, off Fremantle, West Australia. Part of it was charred by fire, but there was no mistaking its identity. ("Colonial Clippers," page 118.)

# THE AMERICAN MARINE EXPOSITION

## Many Maritime Associations Will Participate in American Marine Week in the Grand Central Palace, New York City, November 4 to 11

THE thirtieth general meeting of the Society of Naval Architects & Marine Engineers will be held in the auditorium of the Grand Central Palace, Lexington avenue and Forty-sixth street, New York City, Wednesday and Thursday, November 8 and 9, professional sessions beginning each day at 10 o'clock. This is of importance to the American Marine Association, which will hold its marine exposition in the Grand Central Palace the week of November 4-11, as the naval architects will be in the exposition hall for their meetings, and this means that it will not only give them a personal opportunity of more careful examination of the products offered by the Marine Association's member companies, but it will also give member companies an opportunity to bring their equipment more directly to the architects' attention.

* * *

The Trunk Line Association has granted one and one-half fare to all delegates attending the convention of the American Marine Association, or any of the other organizations participating in the activities of American Marine Week, under the condition that 350 delegates attend, who will bring with them the necessary convention identification certificate, properly executed by the ticket agent from whom they purchase their "going" tickets to New York.

* * *

The firm of W. & J. Tiebout, 118 Chambers street, New York City, will occupy its usual space at the American Marine Exposition this year. The exhibit of this firm has been a well-known feature at the marine expositions and motorboat shows for many years. A complete assortment of marine hardware and supplies will be displayed for the benefit of the visitors of the exposition.

* * *

The maritime organizations that have so far signified their intentions of taking part in American Marine Week and the manner in which they will participate are as follows:

**The Shipping Board**—By an exhibit. Plans are under way to secure addresses from Chairman Lasker and other interesting subjects.

**The Navy Department**—By an exhibit and talks and addresses by leading naval officials.

**The Department of Commerce** will stage a combined exhibit of various marine bureaus, which will occupy about 2000 square feet of floor space. The heads of several bureaus of the department have promised to deliver addresses during the week.

**The Society of Naval Architects and Marine Engineers** will hold its annual convention November 8 and 9 in the auditorium of the Grand Central Palace and the annual banquet on the evening of November 9 at the Waldorf Astoria. This society is co-operating with the American Marine Association to the fullest possible extent.

**The Maritime Association of the Port of New York**—By an exhibit. It has appointed Fred B. Dalzell, Jr., chairman of the committee to co-operate with the maritime organizations taking part in American Marine Week. Dr. Dalzell has guaranteed that speakers from this organization will be available.

**The American Steamship Owners' Association** will hold its quarterly meeting Monday, November 6. Winthrop L. Marvin, vice-president and general manager of the organization, has promised that speakers will be available and he is endeavoring to secure attendance at the exposition of the association's official technical committee and the members of their organization.

**New York Tow Boat Exchange** will take part through an official committee and also will furnish a moving picture film of tow boating in New York Harbor.

**Ocean Officers' Conference** (composed of captains, mates, engineers and radio telegraphers) has agreed to hold a smoker in the auditorium of the Grand Central Palace if the American Marine Association grants permission; otherwise, the smoker will be held at the rooms of the Ocean Engineers' Association. The conference would like to stage a boxing exhibition at this smoker.

**Atlantic Coast Shipbuilders' Association**—J. L. Ackerson, president, states that the organization will be represented at least by an official committee and that he will try to give greater co-operation. Plans are under way to secure speakers from this organization during the week.

**American Bureau of Shipping** will hold meetings of the board of managers and will hold meetings of the technical committee on both naval architecture and marine engineering.

**National Merchant Marine Association**—Letters from this organization state that it would be glad to co-operate and have asked suggestions as to the best way to do this.

**American Society of Marine Designers** will be represented by a booth at the exposition and will also be represented by the executive committee of the national organization. This society will hold no convention this year.

**The Neptune Association**—Captain Milliken, secretary-treasurer, has promised that he will support American Marine Week in any way he can.

Board of Port Authority.
Mississippi Valley Association.
Los Angeles Chamber of Commerce.
San Francisco Chamber of Commerce.
American Marine Association.

* * *

The Westinghouse Electric & Manufacturing Company has made a special effort to prepare an exhibit that should be one of the most attractive features of the Marine Exposition. As this company manufactures every type of electrical apparatus, from the electric propelling equipment for a battle-cruiser to the fan on a cabin wall, as well as geared turbine propelling equipment and steam driven auxiliaries of the most modern type, the exhibit has been prepared with the view of showing the most important and latest developments of such apparatus especially to meet marine requirements. Some of the features to be seen in booths 85 and 87 are as follows:

Complete model of diesel electric propelling equipment—On account of the very special work required to prepare a miniature diesel electric propelling equipment for exhibition purposes, this model was built entirely by members of the marine sales department. It illustrates fully the extreme flexibility that may be obtained with diesel electric drive—both as to control during maneuvering, or running at cruising or reduced speed.

The unit is approximately one-eighth the size of a 1500 horsepower propelling equipment and is mounted upon a base of 5 feet by 9 feet. It consists of two engine driven generating units, each with exciter, the generators in turn supplying power to the single propelling motor. The motor drives a propeller enclosed in a glass case.

A model Kingsbury thrust bearing, such as used with all Westinghouse installations, absorbs the thrust of the propeller. This thrust bearing was designed and built by the Kingsbury Machine Works for use with this model.

The Ward-Leonard system of control is used, the direction and speed of rotation of the motor being controlled entirely by changing the field current of the generators. A control pedestal, such as may be mounted either on the bridge or in the engine room, operates the field rheostat which controls the simple operation of reversal or speed changing.

A switchboard mounted at the end of the unit contains all necessary meters to indicate the performance of the electrical units, as well as switches by means of which one unit may be cut out for running at reduced speeds or for inspection, allowing the other unit to drive the propelling motor.

One hundred kilowatt turbine generator set—This 100 kilowatt, 125 volt, direct current geared turbine generator set is one of the units built especially for the United States Shipping Board. It embodies all the special features that long experience has demonstrated are necessary for proper service under extreme marine conditions. This includes an extra heavy bedplate, marine impregnation of the generator, easily accessible oil cooling coil and triple guards against overspeeding.

Marine type 1500 S. H. P. reduction gear and pinion—This gear and pinion, the product of the South Philadelphia Works, is representative of some of the finest of commercial machine work. It is similar to the gearing installed on the Matson Line steamers Manulani and Manukai, which in both workmanship and results afford one of the finest examples of gear cutting in this or any other country.

Flexible frame pinion—The mounting of this pinion in the flexible frame illustrates the principal feature of Westinghouse marine reduction gears. The flexible mounting permits the pinion to properly align and adjust itself when the inevitable flexure of the gear casing when the vessel is in a seaway produces what would otherwise be a very harmful effect upon accurate and high speed gearing.

Watertight deck winch motor and control—This is the same special Westinghouse design of motor and control which has given such unequaled service on the motorship William Penn and also on the Californian.

Marine gasoline electric lighting set—This small set has been developed for use on small yachts, house boats, docks, etc., where a comparatively small amount of electrical energy is required, or as an auxiliary or standby unit for port service on larger vessels.

The exhibit also includes one of the two types of air ejectors developed for marine use, Navy type circuit breakers, marine type bracket fans, and other examples of supply apparatus.

* * *

The General Electric Company will occupy spaces numbers 3, 4, 5 and 6 on the main floor of the Grand Central Palace during the American Marine Show, November 4 to 11, with a large exhibit of the company's products that are of especial interest to marine engineers, shipbuilders, etc.

The exhibits will be as follows: The rotating element of a 3000 horsepower reduction gear, less the low speed gear, such as is used in ships equipped with geared turbine drive. There will be a model of the low speed gear, and an actual spring thrust bearing used in propulsion service. Further propulsion apparatus will be represented by the control panels built for the Golden Gate Line of diesel engine-electric ferry boats, and turbine-electric boats for the San Francisco-Oakland Line (Key Route) in San Francisco Bay.

Ships' auxiliary apparatus shown will be: One R. C. M., 6 horsepower, 115 volt, direct-current motor used to drive engine room auxiliaries; one C. O. M., 35 horsepower, 230 volt, direct-current motor used to drive deck auxiliaries; an automatic starter and master switch used for the control of such motors; and a 10 kilowatt steam engine driven marine generating set with control switchboard panel. There will also be three 18-inch searchlights, one with remote electric control, one with hand control, and one for pilot house control; one blinker key and lantern, and one three-light tell-tale board with lanterns for mast head and other lights.

There will also be in operation a complete arc welding outfit, consisting of a constant energy generator, motor driven, and the new semi-automatic arc-welding lead recently developed.

Those from the General Electric Company who will be in attendance at the exhibit will be: W. J. Day, E. K. Henley, C. H. Giroux, G. E. Young and W. J. Belanger.

**(Continued on page 621)**

Among the marine instruments to be exhibited by the Sperry Gyroscope Company of Brooklyn at the Marine Exposition will be the new improved Sperry Mk. VI Gyro-Compass. This compass, the result of more than ten years of actual service experience, coupled with research and development work, is fashioned after the Sperry Navy Mk. V compass. Stripped of the refinements required by the navies for gun fire control accuracy, this compass is accurate, rugged and of simple construction. The compass is now in the service of twelve large ship operating concerns, and is creating a considerable amount of interest in shipping circles..

# MR. DAUGHERTY'S LIQUOR RULING

## Full Text of Attorney-General's Opinion on Application of Eighteenth Amendment, with Comment by American Steamship Owners' Association

**The American Steamship Owners' Association has issued the following statement regarding Attorney General Daugherty's ruling:**

**The association has given careful consideration to the opinion of the attorney general and the effect which the enforcement of the Eighteenth Amendment and the National Prohibition Act will have upon American shipping and American foreign trade if they are enforced in accordance with the construction placed upon them by the attorney general. The association feels that the question of meeting the situation thus produced by the attorney general's opinion is one which should be left to the discretion of the individual companies.**

**In the judgment of the association, however, it is a foregone conclusion that if the interpretation of the attorney general is ultimately sustained, American ships will be placed at such a great disadvantage with foreign ships that national aid must be immediately given if privately-owned American ships now operating are to be maintained and the merchant marine and foreign trade developed. The loss in profits to American ships from the sale of liquors will be inconsequential, and really is not a substantial factor in the situation. The serious loss will come from the driving of passengers to foreign passenger ships, not only in the trans-Atlantic trades but more particularly in the trans-Pacific, South and Central American and West Indian trades, where all ships customarily touch at intermediate foreign ports. Passengers between such ports will travel on the ships of foreign lines on which they can obtain their customary wines and other beverages. In traveling by American ships they will either have to forego the opportunity of obtaining such beverages in an open and lawful manner, and either deprive themselves of them or resort to subterfuges. This is certain to arouse animus against American ships, and in driving the passengers to foreign ships will make those ships the instruments by which the trade of our competitors will be advanced and developed.**

**There is but one way in which this disadvantage can be met, and that is by national aid along the lines now provided for in the national shipping bill. The association believes that the friends of prohibition appreciate the situation and will be among the strongest advocates of giving to American ships every assistance that is necessary to maintain and upbuild the merchant marine.**

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THE following is the complete text of the opinion of Attorney General Daugherty, addressed to Secretary of the Treasury Mellon, in which the attorney general holds that the Eighteenth Amendment applies to American vessels "wherever they may be" and to foreign vessels within the three-mile limit. It is this decision that evoked widespread comment. Comparison of it with the opinions of Elmer Schlesinger, general counsel of the Shipping Board, and of William L. Frierson, acting attorney general during the absence of Attorney General Palmer in 1920, both of which were published in the August issue of Pacific Marine Review, will be found interesting.

October 6, 1922.

My dear Mr. Secretary:

Acknowledgement is made of the receipt of your letter of June 23, 1922, in which you enclosed an opinion of the general counsel of the Shipping Board, holding that the Eighteenth Amendment does not apply to American ships on the high seas and stating that in conformity with said opinion liquor is being furnished for beverage purposes on Shipping Board vessels outside the territorial waters of the United States.

### Two Questions Involved

You suggest a reconsideration of the rulings of this department, particularly the opinion of November 1, 1920, relating to the application of the National Prohibition Act to American ships on the high seas and request advice from this department whether the practice of selling liquors on American ships outside the territorial waters of the United States is permissible under the law.

You further request this department to advise you whether under our interpretation of the law and the decisions in Grogan v. Walker and Anchor Line v. Aldridge, cases decided by the United States Supreme Court May 15, 1922, the sale, transportation or possession of intoxicating liquor for beverage purposes on foreign vessels while in American waters is prohibited.

My answer to the first question is in the negative for the following reasons.

The Eighteenth Amendment to the Constitution of the United States provides: "the manufacture, sale, or transportation of intoxicating liquors within, the importation thereof into, or the exportation thereof from the United States and all territory subject to the jurisdiction thereof for beverage purposes is hereby prohibited."

### Are They "Territory"?

The fundamental consideration then upon which the answer to your first query rests is whether United States ships while on the high seas fall under the legal interpretation of the phrase "the United States and all territory subject to the jurisdiction thereof."

To arrive at the correct legal interpretation of any constitutional provision, it is necessary to "read it in the light . . . of the context . . . and the subject with which the amendment dealt and the purpose which it was intended to accomplish . . ." (Chief Justice White, concurring in the National Prohibition cases, 350 U. S. 350-390.)

The purpose or intent of the States in adopting the Eighteenth Amendment and that of the legislative body in initiating it must be considered in the light of "the mischief to be prevented" (Craig v. Missouri, 4 Pet. 410, 431), the subject, the context and intention of the body inserting the word in the Constitution (McCulloch v. Maryland, 4 Wheat. 316), "all the aids and lights of contemporary history" (Kendall v. United States ex rel Stokes, 12 Pet. 524), "in connection with the known condition of affairs out of which the occasion for its adoption may have arisen . . . in a way, so far as is reasonably possible to forward the known purpose or object for which the amendment was adopted." (Maxwell v. Dow, 176 U. S. 581.)

### Fifty Years of Struggle

The mischief to be prevented in prohibition enactments has been construed as the use of intoxicating liquor as a beverage (see Crane v. Campbell 245 U. S.

304). A glance at contemporary history and the conditions of affairs out of which the adoption of the Eighteenth Amendment arose compels the admission that it represents the culmination of fifty years' struggle of the American people to effectively settle the problems arising from the use of intoxicating liquor as a beverage. Beginning by county, and state by state, the area wherein the manufacture, sale and possession of intoxicants were made illegal grew until by the ratification by forty-five of the forty-eight states of the Union, an amendment affirming and extending such prohibition was added to our Federal Constitution. To hold that the intent of Congress in proposing the wording of the amendment, and of the states in ratifying it, was anything less than to extend its inhibitions where the judicial arm of this government extended for any purposes, is to fail to apply all the rules the Supreme Court has laid down for arriving at the intent of constitutional enactments.

The terms "all territory subject to the jurisdiction thereof" expresses not a limitation just to lands, as the word territory might alone be construed, but rather an extension wherever the jurisdiction of the United States may reach.

### Shipping Board Vessels Discussed

Certainly Shipping Board vessels operated and owned by our very government itself are "subject to the jurisdiction thereof". Because of their ownership by the government they would, in a double sense, be subject to the restrictions of the Eighteenth Amendment. But every American vessel is for some purposes regarded as a part of American territory and our laws are the rules for its guidance. (The Scotia, 14 Wall. 170, 184.)

"It is often stated that ship on the high seas constitutes a part of the territory of the nation whose flag it flies. In the physical sense, this phrase obviously is metaphorical. In the legal sense, it means that a ship on the high seas is subject to the exclusive jurisdiction of the nation to which, or to whose citizens, it belongs. The jurisdiction is quasi territorial." (Moore's International Law Digest, Vol. 1, p. 930; U. S. v. Rodgers, 150 U. S. 249.)

### Vessel Is "Territory"

Our diplomatic correspondence and the opinions of the courts have uniformly considered that in so far as the restraining and protecting jurisdiction of our government is concerned, American ships, whether owned by the government or by private citizens or corporations, are in many respects territory of the United States. Some interesting observations in this connection are:

In the case of United States v. Rodgers, 150 U. S. 249, it is said: "A vessel is deemed part of the territory of the country to which she belongs."

In the case of Crapo v. Kelly, 16 Wall. 610, the Supreme Court said: "The question then arises, while thus upon the high seas was she in law within the territory of Massachusetts? . . . This (the Constitution) gives the power to the courts of the United States to try those cases in which are involved questions arising out of maritime affairs and of crimes committed on the high seas."

In Lindstrom v. International Navigation Company, 117 Fed. 170, the court said: "The St. Paul is an American vessel, registered at the port of New York, and when she was on the high seas was a part of the territory of the state of New York, hence all civil rights of action for matters occurring aboard of her at sea are determined by the laws of that state. McDonald v. Mallory, 77 N. Y. 546, 33 American Reports 664; the Lamington (D. C.), 87 Fed. 752; St. Clair v. United States, 154 U. S. 152, 38 L. Ed. 936."

### Blaine and Webster Cited

Mr. Blaine, secretary of state, in a letter to Mr. Ryan, minister to Mexico, November 27, 1889 (set forth in Moore's Law Digest, Vol. 1, p. 931), says: "Merchant vessels on the high seas, being constructively considered as for most purposes a part of the territory of the nation to which they belong, they are not subject to the criminal laws and processes of another nation."

Mr. Webster as secretary of state spoke for this government in his letter to Lord Ashburton, August, 1842, as follows: "It is natural to consider the vessels of a nation as a part of its territory though at sea, as the state retains its jurisdiction over them and according to the commonly received custom, this jurisdiction is preserved over the vessels even in parts of the sea subject to a foreign dominion. . . . It is true that the jurisdiction of a nation over a vessel belonging to it, while lying in the port of another, is not necessarily wholly exclusive. We do not so consider or so assert it. For any unlawful acts done by her while thus lying in port, and for all contracts entered into while there, by her master or owners, she and they must, doubtless, be answerable to the laws of the place . . . but, nevertheless, the law of nations, as I have stated it, and the statutes of governments founded on that law, as I have referred to them, show that enllightened nations, in modern times, do clearly hold that the jurisdiction and laws of a nation accompany her ships not only over the high seas, but into ports and harbors, or wheresoever else they may be, for the general purpose of governing and regulating the rights, duties and obligations of those on board thereof, and that, to the extent of the exercise of this jurisdiction, they are considered as parts of the territory of the nation herself." (Webster's Works, Vol. 6, pp. 306, 307.) This case was cited with approval by the United States Supreme Court in the case of United States v. Rodgers (supra).

In the case of St. Clair v. United States, 154 U. S. 134, 152, the court held: "A vessel registered as a vessel of the United States is, in many respects, considered as a portion of its territory, and persons on board are protected and governed by the laws of the country to which the vessel belongs."

### In a Constructive Sense

Ships are "territory" in a constructive, rather than an actual, sense. This distinction is clearly shown by Justice Field in United States v. Smiley, 6 Sawyer 640, 645: "The criminal jurisdiction of the government of the United States is limited to their own territory, actual or constructive. . . . Their constructive territory embraces vessels sailing under their flag. Wherever they go they carry the laws of their country, and for a violation of them their officers and seamen may be subject to punishment."

Great stress is laid on the argument that the word "territory" in the Eighteenth Amendment must be construed the same as it was in its use in Article IV, Section 3, of the Constitution, and the case of United States v. Cratiot, 14 Pet. 526, is cited to show a construction synonymous with the word "lands". But that the same construction must be given the same word when used in an entirely different context does not follow (Cherokee Nation v. Georgia, 5 Pet. 1). Furthermore, the definition of the word "territory" in the Gratiot case (supra) is specifically restricted in its application to the use in Article IV, since the Supreme Court says they interpret the word "territory" only "as here used". It there referred undoubtedly only to lands, because Article IV, Section 3, was placed in the Constitution to give the Federal government authority over the western territory claimed by states under their conflicting sea to sea grants. (See Debates in the Constitutional Convention and Watson on the Constitution, Volume 21, p. 1255.)

### Intent of the Amendment

The construction of the word "territory" in the fourth article of the Constitution to mean lands is in complete harmony with the intent of the framers of that article of the Constitution. I believe from the study of the history of conditions out of which the Eighteenth Amendment grew, it is equally clear that the words "territory subject to the jurisdiction" of the United States carry the intent to extend its provisions over every spot where the flag of America flies.

This intent is a living part of the Eighteenth Amendment and the National Prohibition Act, for as Justice Brown has said in Hawaii v. Mankichi, 190 U. S. 197, 212: "Without going back to the famous case of the drawing of blood in the streets of Bologna, the books are full of authorities to the effect that the intention of the law-making power will prevail, even against the letter of the statute, or, as tersely expressed by Mr. Justice Swayne in Smythe v. Fiske, 23 Wall. 374, 380: 'A thing may be within the letter of a statute and not within its meaning, and within its meaning though not within its letter. The intention of the lawmaker is the law.' A parallel expression is found in the opinion of Mr. Chief Justice Thompson of the Supreme Court of the State of New York (subsequently Mr. Justice Thompson of this court), in People v. Utica Ins. Co., 15 Johns. 358, 381: 'A thing which is within the intention of the makers of a statute is as much within the statute as if it were within the letter; and a thing which is within the letter of the statute is not within the statute, unless it be within the intention of the makers.' "

### Eighteenth Amendment Really a Law

It is urged that acts passed under Article I, Section 8, Clause 10, of the Constitution, all carry the express provision that they shall apply on the high seas, whereas the National Prohibition Act does not contain such plain extension. But the difference between the two provisions of the Constitution, by authority of which the laws emanate, is material. Article I, Section 8, Clause 10, gives Congress power to define and punish piracies and felonies committed on the high seas, which offenses by their nature had formerly remained solely in the power of the states to handle. Article I of the Constitution prohibited nothing, nor did it define an offense. Of course, therefore, it was necessary for the act of Congress to define the offense, provide for its punishment and make provision as to its jurisdiction, since all the regulatory power lay in the congressional enactment, not in the constitutional provision. The Eighteenth Amendment is quite different. It is really a law itself, as well as a declaration of an organic constitutional principle. From its terms along flows the real prohibition. Palpably, therefore, since by the force of the amendment prohibition is carried everywhere within the confines of the sovereignty of the United States, the National Prohibition Act, passed to facilitate its enforcement and punish its violation, would be co-extensive therewith.

The Thirteenth Amendment is similar. It, too, names a new prohibition and states the extent of its application. Enactments resulting from it do not carry specific provision for their application to offenses committed on the high seas, and yet no one would advance the theory that because of that fact slavery might be permitted on American ships while on the high seas. (See Section 268, Penal Code; also the Peonage Sections 269, 270, 271, Penal Code.)

### Self-Executing Effect

Concerning the self-executing effect of the provisions of the Thirteenth Amendment, the observation of Mr. Justice Bradley in the Civil Rights cases, 109 U. S. 3, 20, is interesting in the light of its applicability also to the effect of the Eighteenth Amendment: "This amendment, as well as the Fourteenth, is undoubtedly self-executing without any ancillary legislation, so far as its terms are applicable to any existing state of circumstances. By its own unaided force and effect it abolished slavery, and established universal freedom. Still, legislation may be necessary and proper to meet all the various cases and circumstances to be affected by it, and to prescribe proper modes of redress for its violation in letter or spirit."

Another illustration of the application of a provision of the Constitution and laws passed pursuant to it to the high seas, even though there is no specific reference to the high seas, is found in Article III, Section 3, Clause 1, of the Constitution, defining treason. It does not indicate the territorial scope of its application, nor do the acts of Congress passed to enforce it, but in United States v. Greathouse, 4 Savoy 457, it was held that the purchase and fitting up of a vessel with arms in furtherance of a design to commit hostilities on the high seas constituted treason. (See also Hawaii v. Mankichi, 190 U. S. 198.)

### "Jurisdiction" Covers Vessels

Section 37 of the Penal Code and other general statutes of the United States, having by their terms no specific extension to the high seas, have been held to extend to violations committed on American vessels outside of American waters.

The same rule has been applied in cases of extradition; for instance, where the treaty has provided that persons will be surrendered who commit crimes within the jurisdiction of the demanding country, the word "jurisdiction" has been held to cover vessels on the high seas. (Moore on Extradition, Vol. 1, p. 135, Sec. 104, Vogt. 14 Op. A. G. 281; Whaton's State Trials, pp. 392, 403, 404; Seale's Cases on Conflict of Laws, Sec. 22, p. 506.)

Vessels are taxable as personal property at their home port, although they are actually on the high seas, and have never in fact come within the jurisdiction of the home port. (People v. Commissioner of Taxes, 58 N. Y. 242; Olson v. San Francisco, 82 Pac. 850.) Similarly the pilotage laws (Wilson v. McNamee, 102 U. S. 572, 574) and the laws concerning assignment (Crapo v. Kelly, 16 Wall. 610) have such extended operation. It is a recognized principle of law that the state has general civil jurisdiction over vessels registered at her ports, even where the cause of action arises on the high seas (Wilson v. McNamee, 102 U. S. 572; Manchester v. Comm. of Mass., 139 U. S. 240; Crapo v. Kelly (supra; Old Dominion Steamship Company v. Gilmore, 206 U. S. 402, 403). In the Old Dominion Steamship Company case, Mr. Justice Holmes in delivering the opinion of the court said: "In short, the bare fact of the parties being outside the territory, in a place belonging to no other sovereign, would not limit the authority of the state, as accepted by civilized theory. No one doubts the power of England or France to govern their own ships upon the high seas."

### Tenants of High Seas

The open oceans, outside the territorial waters of nations, have long been regarded as the highway of all, wherein all nations share the privileges of tenants in common. If, then, the United States shares the high seas as a tenant in common with other nations of the world, the Eighteenth Amendment would be broad enough to comprehend the sea as territory of the United States in so far as, and where, and when, it is used by American bottoms.

In an early English case, the King against Brizac and Scott, 4 Easts Term Reports 164, it is held that "an information for conspiracy . . . for planning and fabricating false vouchers to cheat the Crown, which planning and fabricating were done on the high seas, is well triable in Middlesex." (Quoting from the headnote.)

In Corpus Juris, Volume XVI, under the heading Criminal Law, p. 169, par. 216, it is said: "In the absence of a statute, the courts of a country have no jurisdiction of an offense committed on the high seas except in the case of piracy, unless the offense is committed on board a ship belonging to that country."

### Amendment "Absolutely General"

An examination of the National Prohibition Act by itself leads to the conclusion that its operation is extended to American vessels on the high seas, since its terms are absolutely general and have no limits of any sort. The only objection is that crimes on the high seas are all dealt with in Chapters 11 and 12 of the Criminal Code, but the peculiar language of the relevant section, 272, Penal Code, is significant. All it says is that the crimes and offenses named in the chapter shall be punished when committed on the high seas. It then lists certain ordinary common law offenses such as murder, over which of course the Federal government would not ordinarily by virtue of its limited powers have any jurisdiction whatsoever. There is no intimation in Section 272 that no other crimes and offenses except those defined in Chapter 11 shall be punished when committed on American vessels on the high seas, and especially is there no suggestion that offenses which violate the avowed constitutional policy of the Federal government itself shall be so exempted from punishment. On the contrary, the grant in Section 2 of the Eighteenth Amendment of concurrent power to the states and to the Federal government to enforce the provisions of Section 1 thereof would justify the reasonable conclusion that the Federal enactment passed pursuant thereto reached to the jurisdictional limits of other Federal laws. The provisions of the Criminal Code generally apply to the same territory over which the Judicial Code gives jurisdiction to the United States courts, and Section 41 of the Judicial Code provides: "The trial of all offenses committed upon the high seas . . . shall be in the district where the offender is found, or into which he is first brought." (See Pederson et al v. United States, 271 Fed. 187.)

### Shipping Board's Precedent

The Shipping Board has frequently sought to punish offenses committed against its property on the high seas by maintaining the applicability of general criminal statutes such as Section 37 and Section 35 of the Penal Code of the United States, to crimes committed on the high seas. (See United States v. Hawkins, So. District of N. Y.; also United States v. Bowman, et al., now pending in the Supreme Court of the United States [Docket No. 69.]) It would be inconsistent for American vessels to enjoy the protection of laws of general jurisdiction and fail to be governed by the prohibitions of one of similar jurisdiction.

In the case of United States v. 254 Bottles of Intoxicating Liquors, Southern District of Texas, May 4, 1922, the court announces that "the sole question for decision is, had the master the right to possession of the goods on board ship (of United States) on the high seas and was this possession in violation of the National Prohibition Act?" And then holds that such possession was a violation of the law, for which the stores were forfeitable and the owner liable to punishment.

### Scharrenberg Case Cited

The case of Scharrenberg v. Dollar Steamship Company, 245 U. S. 122, is greatly relied upon by shipping interests as authority that an American ship is not in any sense a part of the territory of the United States. It was a case based on an alleged violation of an act of congress by which it was a misdemeanor to assist contract laborers into the United States.

A contract laborer was defined as one who comes to perform labor in this country. Clearly the phrases "into the United States" and "into this country" are narrower in extent than "the United States and all territory subject to the jurisdiction thereof." Had the Eighteenth Amendment stopped after prohibiting the manufacture, sale or transportation of intoxicating liquors within, the importation thereof into, or the exportation thereof from the United States, the cases would be similar, but the Eighteenth Amendment goes further and says "and all territory subject to the jurisdiction thereof". We are led inevitably, therefore, to the conclusion that after the prohibition in the United States (which to that point is analogous to the statute considered in the Dollar Steamship Company case) the phrase "and all territory subject to the jurisdiction thereof" was added to extend the scope of the amendment to the very limits of national jurisdiction and sovereignty.

### Foreign Vessels Affected

My answer to your second question is in the affirmative.

It is a long established principle of municipal and international law that a nation has the right to make and enforce laws covering its territorial waters as well as its land. In United States v. Diekelman, 92 U. S. 520, 525, Mr. Chief Justice Waite states: "The merchant vessels of one country visiting the ports of another for the purposes of trade subject themselves to the laws which govern the port they visit, so long as they remain." (See also Moore's International Law Digest, Vol. II, 275 et seq.)

In 1885 Mr. Bayard, secretary of state, wrote to the French minister as follows: "A foreign merchant vessel going into the port of a foreign state subjects herself to the laws of that state and is bound to conform to its commercial as well as to its police and other regulations during the period of her stay there. 'She is as much a subditus temporaneous,' remarks Sir R. Phillimore with reference to such a case, in The Queen v. Keyn, 2 Ex. D. 82, 'as the individual who visits the interior of the country for the purposes of pleasure or business.'" (Moore's International Law Digest, Vol. II, page 308.)

"It is a part of the law of civilized nations that when a merchant vessel of one country enters the ports of another for the purposes of trade, it subjects itself to the law of the place to which it goes, unless by treaty or otherwise the two countries have come to some different understanding or agreement; for, as was said by Chief Justice Marshall in The Exchange, 7 Cranch 116, 144, 'it would be obviously inconvenient and dangerous to society, and would subject the laws to continual infraction, and the government to degradation, if such . . . merchants did not owe temporary and local allegiance, and were not amenable to the jurisdiction of the country.' United States v. Diekelman, 92 U. S. 520; 1 Phillimore's Int.

Law, 3rd ed. 483, Sec. 351; Twiss Law of Nations in Time of Peace, 229, Sec. 159; Creasy's Int. Law, 167, Sec. 176; Halleck's Int. Law, 1st ed., 171. And the English judges have uniformly recognized the rights of the courts of the country of which the port is part to punish crimes committed by one foreigner on another in a foreign merchant ship. Regina v. Cunningham, Bell C. C. 72; S. C. 8 Cox C. C. 104; Regina v. Anderson, 11 Cox C. C. 198, 204; S. C. L. R., 1 C. C. 161, 165; Regina v. Keyn, 13 Cox C. C. 403, 486, 525; S. C. 2 Ex. Div. 63, 161, 213. As the owner has voluntarily taken his vessel for his own private purposes to a place within the dominion of a government other than his own, and from which he seeks protection during his stay, he owes that government such allegiance for the time being as is due for the protection to which he becomes entitled." (Wildenhue's Case, 120 U. S. 11, 12.)

### Violations Not Permitted

If then the bringing in of liquors by foreign vessels as ship stores or otherwise constitutes a transportation or possession contrary to the Eighteenth Amendment and the National Prohibition Act, it is clearly a violation of the law that no executive or administrative officer of the government has the power to permit.

The Constitution prohibits transportation which has been defined as "the taking up persons or property at some point and putting them down at another." (Gloucester Ferry Company v. Comm. of Pa., 114 U. S. 196, 203.) That the innocence of any intent to "put them down" or use them in the United States is not material in determining whether the transportation is a violation of the law is determined by the Walker and Anchor Line cases (supra), where the court decided that intoxicating liquor stored on one British ship could not lawfully be removed to another British ship in the New York harbor, although it was admittedly destined for beverage uses outside the United States.

Furthermore, the National Prohibition Act prohibits possession as well as transportation of intoxicants for beverage purposes, irrespective of where they are to be put to such beverage use. Under the reasoning of the court in the Walker and Anchor Line cases (supra), it is no argument for the legality of foreign ships possessing and transporting intoxicating liquors in and across our waters, that they do not intend to use the liquors until after leaving the jurisdiction of the United States, for the court said in that connection: "The Eighteenth Amendment meant a great revolution in the policy of this country, and presumably and obviously meant to upset a good many things on as well as off the statute books. It did not confine itself in any meticulous way to the use of intoxicants in this country. . . . It is obvious that those whose wishes and opinions were embodied in the amendment meant to stop the whole business. They did not want intoxicating liquor in the United States and reasonably may have thought that if they let it in, some of it was likely to stay. When, therefore, the amendment forbids not only importation into and exportation from the United States but transportation within it, the natural meaning of the words expresses an altogether probable intent. The Prohibition Act only fortifies in this respect the interpretation of the amendment itself. The manufacture, possession, sale and transportation of spirits and wine for other than beverage purposes are provided for in the act, but there is no provision for transshipment or carriage across the country from without. When Congress was ready to permit such a transit for special reasons, in the Canal Zone, it permitted it in express words. Title III, Sec. 20; 41 Stat. 322."

### Surrender of Sovereignty

Are we then to argue that such inflexible provisions of law, declared by our Supreme Court as the constitutional policy of our country, shall apply to our own citizens, but be abandoned when we deal with ships of a foreign nation? To do so would be a grievous surrender of our sovereignty. And it is outside the province of an executive or administrative officer of the government to read into the law and the Constitution an exception not specifically contained therein. Particularly should it be avoided when the results of granting the privilege to foreign ships would be to produce manifestly unfair conditions of competition for our own citizens and shipping interests. Chief Justice Marshall puts the situation clearly in "The Exchange," 7 Cranch 135, 143: "The jurisdiction of the nation, within its own territory, is necessarily exclusive and absolute: It is susceptible of no limitation not imposed by itself." . . . "When private individuals of one nation spread themselves through another, as business or caprice may direct, mingling indiscriminately with the inhabitants of that other, or when merchant vessels enter for the purposes of trade, it would be obviously inconvenient and dangerous to society, and would subject the laws to continual infraction, and the government to degradation, if such individuals or merchants did not owe temporary and local allegiance, and were not amenable to the jurisdiction of the country. Nor can the foreign sovereign have any motive for wishing such exemption. His subjects thus passing into foreign countries are not employed by him, nor are they engaged in national pursuits. Consequently, there are powerful motives for not exempting persons of this description from the jurisdiction of the country in which they are found, and no one motive for requiring it. The implied license, therefore, under which they enter, can never be construed to grant such exemption."

Again in the Eagle, 8 Wallace 15, 22, the Supreme Court holds that: "All vessels entering into, or departing from, a domestic or foreign port, are bound to obey the laws and well known usages of the port, and are subject to seizure and penalties for disobedience; and when submitting to them they are entitled to all the protection which they afford."

### Treaty Held Repealed

The court carefully considered this whole question in the Walker and Anchor Line cases and went so far as to hold that the Eighteenth Amendment and the National Prohibition Act repealed a prior existing treaty with Great Britain.

Prior to the sweeping and comprehensive construction placed upon the prohibition law in those cases, it might possibly have been arguable whether liquors forming a part of the ship stores on vessels within territorial waters might be regarded as an implied exception to the National Prohibition Act. Whatever doubts may have previously existed have been swept away by the language of the majority opinion in those cases. It is true that this decision was rendered by a divided court, but the dissenting opinion clearly sets forth the arguments that must have been carefully weighed before the majority opinion was rendered. It included a consideration of such arguments as: "this country does not undertake to regulate the habits of people elsewhere" and "it has no interest in meddling with transportation across its territory if leakage in transit is prevented." But the very vigor of the dissenting opinion in which three judges joined simply emphasized the sweeping character of the majority opinion by which I feel I am bound in deciding this question.

I am, therefore, of the opinion that the Eighteenth Amendment and the National Prohibition Act prohibit as unlawful the possession and transportation of beverage liquors on board foreign vessels while in our territorial waters whether such liquors are sealed or open.

### The Opinion Summarized

By way of summary, therefore, I am of the opinion that under the rules of fair intendment, American ships wherever they may be are included in the terms of the Eighteenth Amendment, "territory subject to the jurisdiction" of the United States, so that manufacture, transportation or sale of intoxicating liquors for beverage purposes is prohibited thereon. To construe otherwise would, in my opinion, violate the unmistakable intent in the adoption, such intent clearly adduced from the study of the circumstances out of which it grew, and voiced by the Supreme Court in the Walker and Anchor Line cases.

This interpretation is further supported by the many authorities that have held ships to be "constructive territory" of the country whose flag they fly. Such decisions undoubtedly extend the protection as well as the inhibitions of the country's laws.

The National Prohibition Act is an act of general jurisdiction in force wherever the Eighteenth Amendment applies; and the courts of the United States have jurisdiction to punish its violations on the high seas.

I am forced to the opinion, under the ruling of the Walker and Anchor Line decisions (supra), that foreign ships carrying intoxicating beverage liquors as ship stores or otherwise, within the three-mile limit of our shores, are violating the provisions of the National Prohibition Act, prohibiting possession or transportation of intoxicating liquor for beverage purposes. The Supreme Court therein has held that it is not material that the liquors may not be intended for beverage uses within the United States, because the court emphasized that the Eighteenth Amendment marks a revolution in our former national policy toward intoxicating liquor and does not confine its prohibition in any meticulous way within the United States, but on the contrary its intent was as far as possible to "stop the whole business."

# THE ITALIAN MERCHANT MARINE BILL

THE following digest of the merchant marine bill introduced in the Italian Parliament by Secretary of the Navy De Vito has been supplied by a naval attache of the Italian Embassy, Washington.

In a speech, the secretary of the navy, Honorable De Vito, outlined the necessity of creating a large and strong merchant marine, so that Italy may compete with other nations, such as Great Britain and France, and also with United States ships that can now be encountered in all waters of the world.

He also stated that in order to have a strong merchant marine, it is necessary that the state intervene for the new constructions. He illustrated the plan which he presented to Congress before the resignation of Premier Facta. The plan, among other things, outlined the institution of a union of all companies and private owners of shipyards and national establishments of naval steel construction, leaving out only those who do not desire to participate to (in) the trust. This union will choose the shipyards and establishments that will contribute to the naval constructions; the guarantees regarding workmen of those that must be closed, besides the conditions of payments and of liquidation of machinery, and the distribution of the existing material among the other united shipyards.

Through an agreement with the Ministry of Marine, a subsidy for construction will be accorded, up to the maximum of lire 1500 per gross ton, for the construction of mixed ships; for the completion of said ships under construction in national shipyards prior to June 30, 1921, and whenever the Ministry of Marine sees the possibilities and technical and economical convenience for the transformation of cargo ships into mixed ships. Special conventions are to be established with the treasury, with the number of employes provided for.

The most important conditions to be fulfilled are continuity and regularity of the work.

Subsidies can be granted for the completion of cargo boats whenever the material is already purchased and the operation of the ship is guaranteed.

The navy can prescribe special performances on the subsidized ships, in order that they may be operated in government subsidized lines.

An appropriation of 325 millions of lire is provided for in the years 1922-1926, distributed as follows: 1922-1923, 80,000,000; 1923-1924, 90,000,000; 1924-1925, 100,000,000; 1925-1926, 55,000,000.

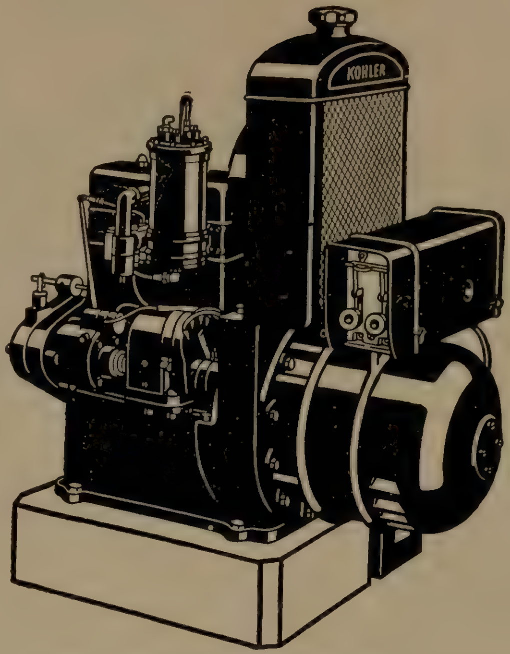
Secretary De Vito of the Italian Navy. Born in 1867, he began his career in the Public Works Department, as one of the most prominent lawyers and jurors. At the age of 42 he was elected to the Chamber of Deputies. During the war as general commissioner of national fuel he succeeded in reducing imports from 12,000,000 tons of coal a year to 5,000,000 tons by operating the lignite mines. In 1920, as secretary of transportation, he traced the big plan of the electrification of the Italian Railways that is now under execution. Premier Facta has called him to the Navy Department. The new organization of the navy yards and the subsidy bill of the merchant marine are his first steps. The merchant marine bill is important socially, because in subsiding naval constructions it aims to reduce the number of unemployed Italian workers.

# KOHLER AUTOMATIC POWER AND LIGHTING UNITS

ONE of the requisites of real safety in emergencies at sea is available power, high above the waterline, for lighting and for operating radio signaling apparatus. The plant to supply such power must be simple, easily understood and practically automatic in its operation. These requirements are met by gasoline engine driven generators of the automatic type, among which the Kohler automatic holds a high reputation and has in a large number of installations on sea-going vessels proved itself suitable for this class of work.

This handy unit, a good idea of which may be gained from the accompanying illustration, gives current of fully 110 volt potential and has circuits so arranged that the unit starts immediately, giving full power within a few seconds after the lamp or motor switch anywhere in the circuit is turned on. The automatic sets as developed for marine use are supplied with a capacity of 2000 watts for steady service and 2500 watts for intermittent service such as is required in radio signaling apparatus. The set is supplied with an automatic governor that responds immediately to varying loads and adjusts the consumption of fuel to the load carried.

The new rules for passenger ships require auxiliary sources of power entirely independent of the ship's main lighting dynamos. These Kohler sets form an ideal unit for the purpose contemplated by this rule, which is in time of emergencies to preserve the morale of passengers and crew by providing deck and signaling lights; and to preserve communication with shore and other vessels by providing power for radio at times when the engine and boiler rooms may be flooded and all other power out of commission. The Kohler is distributed on the Pacific Coast by the Ship Owners' Radio Service, Inc.



Kahler automatic power and light plant, 110 volt, D. C.

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### A CLOVERLEAF INSTALLATION

AN interesting installation of a Cloverleaf propeller was made recently on the Matson Navigation Company's dispatch launch Barnacle, which upholds the unique guarantee of the Cloverleaf Propeller Company that its propeller would produce greater speed than any other propeller of the same diameter and pitch on the market today.

The Barnacle is a semi-speed boat 50 feet in length by 8 feet 2 inches beam and 3 feet 10 inches draft. Her engine is an old style six-cylinder Speedway with cylinders 6 inches in diameter and 6-inch stroke, rated 65 horsepower at 700 revolutions a minute.

Captain A. Anderson of the Barnacle reports that from San Francisco to Suisun, a trip which he often makes, is now accomplished in 2 hours 55 minutes whereas it formerly took 3 hours and 30 minutes.

The Matson launch Barnacle

This increase in speed of about 17 per cent was made by the installation of a Cloverleaf propeller of the same diameter and pitch as the elliptical shaped wheel which was taken off. At the same time the fuel consumption for the trip was reduced about 17 per cent, pointing directly to the increased efficiency of the propeller.

The revolutions of the old wheel were 625 and of the Cloverleaf 680. The engine runs much smoother, all vibration is stopped and the boat handles better in every way.

Experiments are now in progress on steam vessels and careful data will be taken to see if the larger vessels will show proportional gains in speed and fuel economy.

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### THE AMERICAN MARINE EXPOSITION

(Continued from page 614)

The Crandall Engineering Company will exhibit a demonstration model of a longitudinally trussed floating dock (the dock that holds the ship in line) and a working model of a railway drydock. The company also will have photographs of its drydocks now in operation. Some of these photographs will show docks more than sixty-five years old and still operating at full capacity. The exhibit will be in charge of Ray H. Lindgren and J. Stuart Crandall, who will be ready to answer questions on drydock design and drydocking problems.

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The American Engineering Company will have its exhibit in Section 89.

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Booth No. 18 of the Hooven, Owens, Rentschler Company, Hamilton, Ohio, will be in charge of G. A. Rentschler, Jr., Henrik Greger and Harry A. Smith. This company, which builds the well known Hamilton marine engine, will exhibit the Hamilton Damar piston ring, marine engine parts, pictures of various sized Hamilton marine engines, as well as views of the plant and of ships driven by Hamilton engines.

# NEW MOTORSHIPS, JULY, 1921, TO JUNE, 1922

## Bureau of Foreign and Domestic Commerce Tabulates 43 Built and 2 Converted, According to Data of Lloyd's Register

| Name | Gross Tonnage | Builder | Owner |
|---|---|---|---|
| | | **Swedish Flag** | |
| Arator | 3760 | Kockums M. V. Aktieb–Malmo | Svenska Lantmannens Raderi Aktieb (J.M.Dannberg, Mgr.) |
| Canton | 5700 | A/B Oresundsvarvet–Landskrona | A/B Svenska Ostasia tifka Kompaniet (D. Brostrom, Mgr.) |
| Eknaren | 5260 | W. Doxford & Sons, Ltd.–Sunderland | Rederiaktieb Transatlantic (G. Carlsson, Mgr.) |
| Hemland | 5677 | Aktib. Gotaverken–Gothenburg | Angf. Aktieb. Tirfing (Dan Brostrom, Mgr.) |
| Lakonia | 5608 | A. B. Gotaverken–Gothenburg | Trafikaktiebolage & Grangesburg-Oxelosund (G.Dillner, Mg.) |
| Oljaren | 5450 | A. B. Gotaverken–Gothenburg | Rederiaktieb Transatlantic (G. Carlsson, Mgr.) |
| Trolleholm | 5000 | Kockums M V. Aktieb–Malmo | Aktieb. Svenska Amerika Mexiko Linen (D.Brostrom, Mgr.) |
| | | **Italian Flag** | |
| Ardito | 5435 | Cant. Nav.–Tositranto | La Paldense Soc. Anon. Marittima. |
| Augustella* | 2373 | Russell & Co.–Pt. Glasgow | Soc. Italiana di Nav. "Stella d'Italia." |
| | | **Danish Flag** | |
| Bintang | 2500 | A/S Nakskov Skibs–Nakskov | A/S Det. Ostasiatske Compagni. |
| Louisiana | 6513 | Ardrossan D.D.&S.B. Co.Ltd.–Ardrossan | Det. Forenede Dampskibs Selsk. |
| Polarhavst | 4104 | Kjobnhvns Flydk. & Skbs.–Copenhagen | D/S A/S Atlanterhavet. |
| | | **United States Flag** | |
| Californian | 7800 | Merchant S. B. Corp.–Chester, Pa. | American-Hawaiian S. S. Co., Inc. |
| H. T. Harper | 3803 | Moore S. B. Co.–Oakland, Cal. | Standard Oil Co., California. |
| Missourian | 7800 | Merchant S. B. Corp.–Chester, Pa. | American-Hawaiian S. S. Co., Inc. |
| | | **Spanish Flag** | |
| Condede Churruca | 4454 | Armstrong Whitworth & Co., Ltd.–Newcsl. | Soc. Commercial de Oriente. |
| | | **Norwegian Flag** | |
| Cometa | 3794 | Akt. Burmeister & Wain–Copenhagen | Det. Bergenske-Dampskibselsskab. |
| Geisha | 5113 | Nederl. Schps. Matts–Amsterdam | Den Norske Ruslandslinje (Winge & Co., Mgrs.) |
| Hallfried | 5282 | Wrf. Voorh. Rijkee & Co.–Rotterdam | A/S D/S Hallfried (P. Kleppe, Mgr.) |
| Handicap | 5013 | Rosenberg Mek. Vaerk.–Stavanger | Bruusgaard Kiosterud, Dampskibs. |
| Hangar† | 2194 | Oswald Mordaun & Co.–Southampton | S. Rasmussen. |
| Teneriffa | 7100 | Akt. Burmeister & Wain–Copenhagen | D/S A/S Den Norske Afrika og Australielinge (Wilh. Wilhelmsen, Mgr.) |
| Tennessee | 7100 | Akt. Burmeister & Wain–Copenhagen | W. Wilhelmsen. |
| Thalatta | 7100 | Akt. Burmeister & Wain–Copenhagen | W. Wilhelmsen. |
| | | **British Flag** | |
| Dalgoma | 6000 | A. Stephen & Sons, Ld.–Glasgow | British India Stm. Nav. Co., Ld. |
| Domala | 8441 | Barclay, Curle & Co., Ld.–Glasgow | British India Stm. Nav. Co., Ld. |
| Dominion Miller | 5089 | W. Doxford & Sons, Ld.–Sunderland | Norfolk & N. Am. Stm. Shpg Co., Ld. (Furness, Withy & Co., Ld., Mgrs.) |
| Dumana | 8250 | Barclay, Curle & Co., Ld.–Glasgow | British India Stm. Nav. Co., Ld. |
| Dumra | 2500 | C. Hill & Sons, Ld.–Bristol | British India Stm. Nav. Co., Ld. |
| Dwarka | 2500 | C. Hill & Sons, Ld.–Bristol | British India Stm. Nav. Co., Ld. |
| Hauraki | 7113 | W. Denny & Bros., Ld.–Dumbarton | Union S. S. Co. of New Zealand, Ld. |
| Lassell | 7400 | A. McMillan & Son–Dumbarton | Liv. Brazil & R.Plate S.N. Co.Ld. (Lamport&Holt, Ld., Mgrs.) |
| Linnell | 7424 | A. McMillan & Son–Dumbarton | Liv. Brazil & R.Plate S.N. Co.Ld. (Lamport&Holt, Ld., Mgrs.) |
| Scottish Borderer | 7000 | W. Denny & Bros., Ld.–Dumbarton | Tankers, Ld. |
| | | **Dutch Flag** | |
| Dinteldijk | 9500 | Harland & Wolff, Ld.–Glasgow | Holland Amerika Lijn. |
| Drechtdijk | 9100 | Harland & Wolff, Ld.–Greenock | Nederl.-Amerik Stoomv. Matts (Holland Amerika Lijn) |
| Kedoe | 3714 | Burmeister & Wain–Copenhagen | Rotterdamsche Lloyd (W. Ruys & Zonen, Mgrs.) |
| | | **German Flag** | |
| Ermland | 6000 | Blohm & Voss–Hamburg | Hamburg- Amerk. Packetf. Akt. Ges.-Ham.-Amer. Line. |
| Havelland | 6308 | Blohm & Voss–Hamburg | Hamburg- Amerk. Packetf. Akt. Ges.-Ham.-Amer. Line. |
| Munsterland | 6314 | Blohm & Voss–Hamburg | Hamburg- Amerk. Packetf. Akt. Ges.-Ham.-Amer. Line. |
| Rheinland | 6526 | Blohm & Voss–Hamburg | Hamburg- Amerk. Packetf. Akt. Ges.-Ham.-Amer. Line. |
| Julius Schindler | 2770 | Deutsche Werft A. G.–Hamburg | Oelwerke-Julius Schindler-S. n. b. H. |
| Magdalene Vinnen | 3476 | Frd. Krupp Akt. Ges.–Kiel | F. A. Vinnen & Co. |
| Oberschlesien | 2083 | Frd. Krupp Akt. Ges.–Kiel | Akt. Ges. Hugo Stinnes fur Seeschiff f. u. Ueberseehandel |
| Ostpreussen | 2082 | Frd. Krupp Akt. Ges.–Kiel | Akt. Ges. Hugo Stinnes fur Seeschiff f. u. Ueberseehandel |

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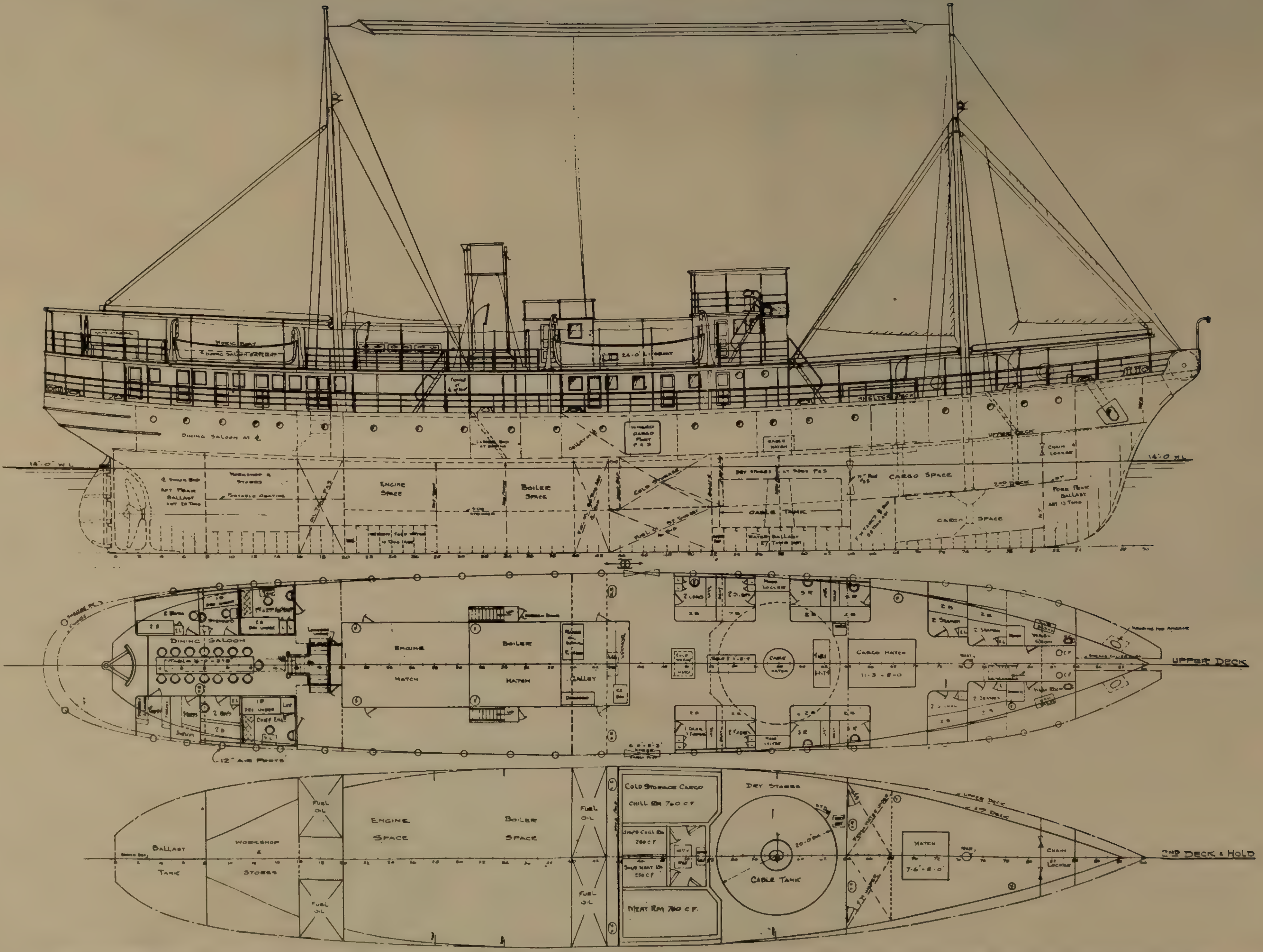
*Built 1892; changed from coal to oil burner 1921.

†Built 1885; diesel engine fitted 1922.

# A NEW CABLE STEAMER



Inboard profile, upper and second decks and hold of a passenger and supply vessel to be built for the Commercial Pacific Cable Company by the Sun Shipbuilding Company

# AN INTERESTING COEN INSTALLATION

Installation of Coen Oil Burners on S. S. President Taft

THE illustration herewith shows an installation of Coen oil burners on the United States Shipping Board steamer President Taft, formerly the Buckeye State. On the President Taft there are eight Yarrow watertube boilers. These boilers were originally equipped with seven navy type oil burners, arranged for forced draft with closed stoke-hold. Under such conditions the fire rooms were worked at a temperature which was unbearable in the tropics, averaging around 120 degrees, and there was much trouble keeping fire room crews. In making the change to Coen burners, three large burners were used to replace seven of the navy type on each boiler. It was demonstrated very quickly that these burners working on natural draft would greatly reduce the boiler room temperature without reducing steam delivered to the engines.

On a twelve-hours trial run September 13, 1922, with fires burning on 145 pounds pressure, and with an observed average speed of 18.66 knots, the stack temperatures ranged from 520 to 580, with an atmospheric temperature of 50 Fahrenheit and a fire room temperature of about 90. The burners had been installed under a guarantee that they would take care of 600 pounds of fuel oil per hour. On this trial the twenty-four burners burned 512 barrels in twelve hours, which is well in excess of the guarantee.

The engineer writes from Honolulu expressing his satisfaction with the new equipment. Says he: "We arrived in Honolulu September 17 after a voyage of 5 days 14 minutes steaming time, making an average speed of 17.33 knots per hour; average r. p. m. for voyage, 115.6; propeller slip, 11 per cent; average oil pressure on burners, 80 pounds, No. 65 tips; fuel consumption per day, 907 barrels; practically clear stack."

It will be noted that the speed on the trial was 18.66 and the average speed on the run to Honolulu 17.33. The economical speed for these ships is around 17 knots. The object of forcing the burners on the trial and of the guarantee requirement to burn 600 pounds an hour per burner was to insure that this equipment could easily take care of the normal power requirements for economical cruising speed with one burner entirely out of commission. This has been aptly demonstrated, both on the running conditions and in trial, and the President Taft is now in a position to shut down any one of her boilers at sea for temporary repairs or clean-out without disturbing the normal speed at which it is intended to run the ship.

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## THE LUCKENBACH SERVICE

THE Luckenbach Steamship Company now maintains a sixteen-day schedule in its Pacific Coast-Gulf service. The Gulf fleet consists of the Florence L., Jacob L., Lena L., Horace L. (ex Eastern Trader), William Campion (chartered), and Dochra (chartered). To North Atlantic ports a seven-day schedule is maintained consisting of the following fleet: Andrew F. Luckenbach, Dorothy L., Edgar L., Edward L., F. J. Luckenbach, Harry L., J. L. Luckenbach, Julia L., K. I. Luckenbach, Katrina L., Lewis L., Lillian L., Paul L., Robert L., Walter A. Luckenbach. The vessels make the trip (actual delivery time) from New York to Los Angeles in seventeen days; to San Francisco, twenty days; to Portland, twenty-five days; to Seattle, twenty-eight days.

The Sun Shipbuilding Company is remodeling three transports, all originally laid down for Luckenbach after the company's own plans. They are the Lillian L. (ex Marica), Dorothy L. (ex Edellyn), J. L. Luckenbach (ex South Bend).

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## BRITISH MAIL CONTRACTS

ON page 567, October issue of Pacific Marine Review, was published an article from Commerce Reports on "Ocean Mail Contracts of the United Kingdom." At the time Commerce Reports published the article there was doubt as to the status of the Royal Mail Packet Company's subvention for West Indian service, which had been in effect for nearly eighty years until the expiration in 1917 of a contract for a fortnightly service from Southampton to Trinidad at $306,000 a year and for a fortnightly service between Barbados and Guiana at $121,700. The following from Commerce Reports tells of the present status and rounds out the former article: The subsidy to the Royal Mail Packet Company for transportation of mails between the United Kingdom and the West Indies was terminated, and the company for several years has been paid for the mails at the customary ship's letter rates. These payments and similar noncontract payments to other companies amount to about £45,000 ((about $200,000 at current exchange), in addition to the amounts set forth in the article referred to above. The total payments, including £90,000 Admiralty subvention to the Cunard Line for 1921, were accordingly close to £600,000.

# THE HAGUE RULES REVISIONS

## Shipping Board Holds Hearing on Proposed Changes, which will be Considered by Comite Maritime and International Maritime Conference

IN response to an invitation issued by the Shipping Board, representatives of different interests concerned met in Washington September 20 and 21 to discuss the proposed Rules for the Carriage of Goods by Sea, which are a modification of the Hague Rules, 1921. The primary object of the conference was to acquaint United States delegates to the Comite Maritime Conference in London, October 9 to 11, with American sentiment, but no formal resolutions were adopted. The results of the consideration of the Comite Maritime will be laid before the International Maritime Conference, which will meet in Brussels late in October.

Both the old and revised texts of the rules are printed below; preceding them appears a digest of statements made at the Shipping Board hearings, with particular emphasis on the attitudes of underwriters and shippers, as almost nothing was said in behalf of shipowners.

### The Underwriters' Viewpoint

Digests of statements made by underwriters follow:

**William H. McGee**, president of the American Institute of Marine Underwriters: "We think the amendments proposed by the Imperial Shipping Committee represent a substantial improvement upon the Hague Rules, and we believe that the rules, as amended by that committee, represent a desirable improvement upon existing law. In the main we are very much in favor of them."

**Harry E. Reed**, a member of the institute's committee and representing the Fireman's Fund and Home Fire & Marine, said that the committee believed that the institute should advocate additional amendments as follows:

"I. We think the rules should be extended to include cargo carried on deck. (Article I, Section (c) ).

"II. The rules should apply to cargo from the time it is received into the custody of the carrier until its delivery to consignee. (Article I, Section (e) and Article VII.)

"III. When goods are delivered in a damaged condition, a notation of the damage on the receipt given by the consignee to the carrier should be sufficient notice of claim. (Article III, Section 6.)

"IV. The carrier should remain liable for fire if such fire is caused by the design or neglect of such carrier. This merely continues the law as it now exists in accordance with U. S. R. S., Section 8020. If the rules are enacted by the United States, they might be construed as repealing such statute, unless the phraseology which we have suggested be added in Article IV, Section 2, Sub-Division (b)."

### Uniform Valuation Clause

**O. R. Houston**, institute attorney, stressed the necessity of the adoption of a uniform valuation clause. A fair measure of responsibility, he said, should be imposed upon the carrier. In reply to a question of Commissioner Plummer, as to whether the rules were designed by insurance companies to decrease their liability and increase that of the carrier, Mr. Houston said that the initiative came from the British Empire and that American underwriters did not know of their adoption until after action had been taken.

**F. Francis Laws**, attorney representing the Insurance Company of North America, indorsed the rules "generally speaking." No carrier, he said, should have the benefit of any money received by a shipper or consignee from an underwriter. Theft and pilferage under present conditions had increased considerably within the last few years. Article VIII should be amended so that the rules should not affect the rights and obligations of carriers under any United States or foreign statute relating to the limitation of liability of shipowners. The rules, too, should apply to coastwise trade, but as to the Great Lakes Mr. Laws was not certain, as he had not studied that phase.

### Insurance Should Not Be Injected

**Henry H. Reed** of the Insurance Company of North America, representing the American Exporters' & Importers' Association of New York, said that the latter organization favored the rules but did not wish to bind the delegates. His organization was interested, said Mr. Reed, in seeing that goods of members moved safely, that the carrier was the only person to accomplish that end, that responsibility should rest with the steamship from time of receipt of goods until delivery to consignee, but above all the association desired a bill of lading that would protect.

**S. D. McComb**, Marine Office of America: "The insurance phase should not be injected into the rules. The responsibility of carrier and shipper should be definitely defined and a penalty should be imposed for the deception of innocent consignees." He believed that Article IV, Section 2 (a) should read that "neither the carrier nor the ship shall be responsible for loss or damage arising or resulting from" faults or errors of navigation.

### Would Lower American Standards

**Wade Robinson**, of Robinson, Sanford & Stone, insurance, New York, in a statement filed with the board said that the Hague Rules would raise standards elsewhere but would lower them in the United States. He urged that the Shipping Board appoint a committee representing different interests to draft a reasonable American bill of lading. Any modification of the Hague Rules that would detract from conditions brought about by the Harter Act would act to the detriment of American shippers.

**D. Roger Engler**, attorney for the American Institute of Marine Underwriters, agreed as a matter of principle that shippers should pay freight on a basis of valuations, but insisted that the plan was not practicable. The institute would not object to the limitation period of two years being reduced to one, but it would object to the valuation being cut.

### What the Shippers Say

Views of shippers follow:

**Charles S. Haight**, chairman of the bill of lading committee of the International Chamber of Commerce, was one of the principal speakers. His organization, he said, viewed the situation from a world-wide standpoint, that existing conditions were chaotic, no two steamship companies using the same bills of lading. He cited many instances of undesirable clauses in bills of lading, and said that the right way to change the Hague Rules was to secure a fair adjustment of risk and liability of shipper and carrier.

"The shipowner, the shipper, the buyer, or consignee, the banker, and cargo underwriter, are all interested in these rules, but the result to be reached must be a compromise," said he. "The McKellar bill now before the Senate is word for word the Nelson bill of ten or twelve years ago, which failed to pass because it developed into a matter of insurance. The Harter Act fails to give relief on burden of proof, notice of claim, and limitations of liability.

"There is no distinction between the views of American and foreign shippers. At the World Shipping Conference held in London some time ago the steamship owners unanimously indorsed the rules. Later the corn and timber interests of Great Britain, who were in the minority, fought the rules because bulk cargoes were not mentioned. Since then the rules have been so amended as to remove these objections. If the United States joins this movement we will have 53 per cent of the world's tonnage lined up. If the United States and Great Britain join, other nations will follow and then we will be enabled to have a uniform bill of lading.

"It is the consensus of opinion of marine underwriters and a majority of shippers that the rules as they now stand should be improved, but if they cannot be so improved they should be adopted as framed. The shipowner wants equality on a competitive basis."

### Proposed Amendments Considered

The world could adjust itself to a uniform bill of lading, he asserted. Then he took up different proposed amendments to the Hague Rules: That deck cargo be included—the rules should remain as they stand. Claims clause should be changed in phraseology but not in substance. Strikes and lockouts—he did not believe that the captain of a vessel could be held responsible if he reached a port where a strike was in progress and he was unable to discharge, nor did he believe that responsibility for delay should rest upon the shipowner. "Description"—under the present rules this could mean only the outside of a package, as the carrier could not know its contents. "Delivery"—should mean unloading, and the limitation period for filing suits, now two years, should be reduced to one. Responsibility of carrier while goods are in his custody—this is susceptible of various interpretations and it would be almost impossible to obtain a uniform bill of lading in this regard. Bulk and timber cargoes—these were included in the revised rules and British organizations had withdrawn their objections. Making shipowner responsible from time of receipt of goods until delivery to the consignee—this amendment should not be adopted; 44 of 48 states had warehouse acts and uniformity could not be had. Most of the losses occurred abroad. A shipowner should not be held responsible for cargo after delivery to a public lighter in a foreign port, as cargo would have to pass through a custom house. He quoted Sir Norman Hill as saying that all maritime nations must recognize local conditions; the problem as regarded America would not be so difficult, but every foreign port had its own laws, so that uniformity scarcely could be had in regard to delivery to consignee. Neither the International Chamber of Commerce nor the International Law Association thought amendment of this section feasible.

### Some Other Views

**Frederick H. Price,** representing the Millers' National Federation of Chicago and the Shippers' Conference of New York, approved of the rules with alterations.

**J. C. Lincoln,** traffic manager of the Merchants' Association of New York, indorsed the rules with revised code and urged the adoption of uniform regulations of responsibility of carriers in overseas trade.

**Charles E. Herrick,** chairman of the traffic committee of the Institute of Meat Packers and representing the Illinois Manufacturers' Association and National Industrial Traffic League, said that carriers should not be allowed to deviate from schedules and routes for profit, especially when perishable freight was aboard. He was opposed to impairing the rules of the Harter Act and said that his organization believed that carriers should be held responsible for delays due to strikes and lockouts.

**Wilbert Ward,** representing the American Acceptance Council and the National City Bank, said that the bank, which handles $500,000,000 worth of documentary credit a year, must accept the bill of lading as poor security until it is made uniform.

**O. K. Davis,** secretary of the National Foreign Trade Council, indorsed the views of the American Institute of Marine Underwriters. **C. D. Baldwin.** transportation department, United Shoe Machinery Corporation, advocated a change in the custom of steamship companies of stamping bills of lading with denials of responsibility for pilferage, leakage and frail packing. **Elliot F. Goodwin,** resident vice-president of the Chamber of Commerce of the United States, said that his organization had indorsed the Hague Rules and had asked Congress to enact legislation for the rules with such interpretations as might be necessary. **Nathan B. Williams,** representative of the National Association of Manufacturers, said that his organization had indorsed the rules as a practical step in advance, "but not as a final substitute for highly desirable national legislation fortified by international agreements." **The National Export Grain Association** sent a telegram as follows: "Foreign grain trade as represented by the London Grain Trade Association strongly opposed to provisions of Hague Rules which fail to protect merchandise to the injury of not only the grain dealer but the farmer as well."

**Frank S. Gardner,** New York Board of Trade and Transportation, criticised Article VI, which provides for special agreements, and asserted that it would "knock the rules into a cocked hat." **Harvey N. Dickson,** secretary of the National Lumber Exporters' Association, said that his organization wished to protest against the adoption of the Hague Rules. In this attitude the association was influenced by its affiliated organizations in Britain, whose members would not accept bills of lading in which the rules were included.

Shipowners figured little in the discussion.

**Walter Berry,** chairman of the bill of lading committee of the Emergency Fleet Corporation, said that the dual system of bills of lading did not have the support of shipper, carrier or underwriter. He asked whether lakes and coastwise trades should be included in the rules; several leading speakers replied that they should.

The original and amended rules are published below. Portions of the original deleted in the amended text appear thus: (RECEIVED ON THE SHIP'S TACKLE); and additions thus: **which by the contract of carriage is stated as being.**

The text follows:

## (HAGUE RULES, 1921.)

## RULES FOR THE CARRIAGE OF GOODS BY SEA.

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### Article I.—Definitions.

In these rules—

(a) "Carrier" includes the owner or the charterer, who enters into a contract of carriage with a shipper.

(b) "Contract of carriage" means a bill of lading or any similar document of title in so far as such document relates to the carriage of goods by sea.

(c) "Goods" includes goods, wares, merchandise, and articles of every kind whatsoever except live animals and cargo **which by the contract of carriage is stated as being carried on deck and is so carried.**

(d) "Ship" includes any vessel used for the carriage of goods by sea.

(e) "Carriage of goods" covers the period from the time when the goods are **loaded on** (RECEIVED ON THE SHIP'S TACKLE) to the time when they are **delivered** (UNLOADED) from the (SHIP'S TACKLE) **ship.**

### Article II.—Risks.

Subject to the provisions of Article VI. under every contract of carriage of goods by sea the carrier, in regard to the **receipt,** handling, loading, stowage, carriage, custody, care, (AND) unloading **and delivery** of such goods, shall be subject to the responsibilities and liabilities, and entitled to the rights and immunities hereinafter set forth.

### Article III.—Responsibilities and Liabilities.

1. The carrier shall be bound before and at the beginning of the voyage to exercise due diligence to—

(a) Make the ship seaworthy.

(b) Properly man, equip and supply the ship.

(c) Make the holds, refrigerating and cool chambers, and all other parts of the ship in which goods are carried, fit and safe for their reception, carriage and preservation.

(The limitations of type make it difficult to convey the changes made in Section 2, so that both the old and new are printed in full.—Editor.)

Old text:

2. The carrier shall be bound to provide for the proper and careful handling, loading, stowage, carriage, custody, care, and unloading of the goods carried.

New text:

2. **Subject to the provisions of Article IV,** the carrier shall properly and carefully handle, load, stow, carry, **keep,** care for, unload **and deliver** the goods carried.

3. After receiving the goods into his charge the carrier or the master or agent of the carrier shall on (THE) demand (OF THE SHIPPER) issue **to the shipper** a bill of lading showing amongst other things:

(a) The leading marks necessary for the identification of the goods as the same are furnished in writing by the shipper before the loading of such goods starts, provided such marks are stamped or otherwise shown clearly upon the goods if uncovered, or on the cases or coverings in which such goods are contained, in such a manner as **should ordinarily** (WILL) remain legible until the end of the voyage.

(b) The number of packages or pieces, or the quantity, or weight, as the case may be, as furnished in writing by the shipper (BEFORE THE LOADING STARTS).

(c) The apparent order and condition of the goods.

Provided, that no carrier, master or agent of the carrier shall be bound to issue a bill of lading showing any description, marks, number, quantity, or weight which he has reasonable ground for suspecting do not accurately represent the goods actually received.

4. Such a bill of lading (ISSUED IN RESPECT OF GOODS, OTHER THAN GOODS CARRIED IN BULK, AND WHOLE CARGOES OF TIMBER) shall be prima facie evidence of the receipt by the carrier of the goods as therein described in accordance with section 3 (a), (b) and (c). (UPON ANY CLAIM AGAINST THE CARRIER IN THE CASE OF GOODS CARRIED IN BULK OR WHOLE CARGOES OF TIMBER THE CLAIMANT SHALL BE BOUND, NOTWITHSTANDING THE BILL OF LADING, TO PROVE THE NUMBER, QUANTITY, OR WEIGHT ACTUALLY DELIVERED TO THE CARRIER.)

5. The shipper shall be deemed to have guaranteed to the carrier the accuracy **at the time of shipment** of the description, marks, number, quantity and weight, as furnished by him, and the shipper shall indemnify the carrier against all loss, damages and expenses arising or resulting from inaccuracies in such particulars. **The right of the carrier to such indemnity shall in no way limit his responsibility and liability under the contract of carriage to any person other than the shipper.**

6. Unless (WRITTEN) notice of a claim for loss or damage and the general nature of such claim be given in writing to the carrier or his agent at the port of discharge before **or at the time** of the removal of the goods **into the custody of the person entitled to delivery thereof under the contract of carriage,** such removal shall be prima facie evidence of the delivery by the carrier of the goods as described in the bill of lading, and in any event the carrier and the ship shall be discharged from all liability in respect of loss or damage unless suit is brought within (12 MONTHS) 2 years after delivery of the goods **or the date when the goods should have been delivered.**

**In the case of any actual or apprehended loss or damage the carrier and the receiver shall give all possible facilities to each other for inspecting and tallying the goods.**

7. After the goods are loaded the bill of lading to be issued by the carrier, master or agent of the carrier to the shipper shall, if the shipper so demands, be a "shipped" bill of lading, provided that (No "RECEIVED FOR SHIPMENT" BILL OF LADING OR OTHER DOCUMENT OF TITLE SHALL HAVE BEEN PREVIOUSLY ISSUED IN RESPECT OF THE GOODS) **if the shipper shall have previously taken up any document of title to such goods he shall surrender the same as against the issue of the "shipped" bill of lading, but at the option of the carrier such document of title may be**

(IN EXCHANGE FOR AND UPON SURRENDER OF A "RECEIVED FOR SHIPMENT" BILL OF LADING THE SHIPPER SHALL BE ENTITLED WHEN THE GOODS HAVE BEEN LOADED TO RECEIVE A "SHIPPED" BILL OF LADING.)

(A "RECEIVED FOR SHIPMENT" BILL OF LADING WHICH HAS SUBSEQUENTLY BEEN) noted **at the port of shipment** by the carrier, master or agent with the name or names of the ship or ships upon which the goods have been shipped and the date or dates of shipment **and when so noted the same** shall for the purpose of (THESE RULES) this rule be deemed to constitute a "shipped" bill of lading.

8. Any clause, covenant or agreement in a contract of carriage relieving the carrier or the ship from liability for loss or damage to or in connection with goods arising from negligence, fault or failure in the duties and obligations provided in this article or lessening such liability otherwise than as provided in these rules, shall be null and void, and of no effect.

### Article IV.—Rights and Immunities

1. Neither the carrier nor the ship shall be liable for loss or damage arising or resulting from unseaworthiness unless caused by want of due diligence on the part of the carrier to make the ship seaworthy, and to secure that the ship is properly manned, equipped, and supplied. **Whenever loss or damage has resulted from unseaworthiness the burden of proving**

**the exercise of due diligence shall be on the carrier or other person claiming exemption under this section.**

2. Neither the carrier nor the ship shall be responsible for loss or damage arising or resulting from—
   (a) Act, neglect, or default of the master, mariner, pilot, or the servants of the carrier in the navigation or in the management of the ship.
   (b) Fire.
   (c) Perils, dangers and accidents of the sea or other navigable waters.
   (d) Act of God.
   (e) Act of war.
   (f) Act of public enemies.
   (g) Arrest or restraint of princes, rulers or people, or seizure under legal process.
   (h) Quarantine restrictions.
   (i) Act or omission of the shipper or owner of the goods, his agent or representative.
   (j) Strikes or lockouts or stoppage or restraint of labor from whatever cause, whether partial or general.
   (k) Riots and civil commotions.
   (l) Saving or attempting to save life or property at sea.
   (m) Inherent **liability for wastage in bulk or weight or inherent** defect, quality or vice of the goods.
   (n) Insufficiency of packing.
   (o) Insufficiency or inadequacy of marks.
   (p) Latent defects not discoverable by due diligence.
   (q) Any other cause arising without the actual fault or privity of the carrier, or without the fault or neglect of the agents, servants or employes of the carrier, **but the burden of proof shall be on the person claiming the benefit of this exception to show that neither the actual fault or privity of the carrier nor the fault or neglect of the agents, servants, or employes of the carrier contributed to the loss or damage.**

**3. The shipper to the same extent as the carrier shall not be responsible for loss or damage sustained by the carrier or the ship arising or resulting from any of the causes particularized in the above section 2 under the headings (b), (c), (d), (e), (f), (g), (h), (j), (k), (p) and (q).**

4. (THREE) Any deviation in saving or attempting to save life or property at sea, or any deviation authorized by the contract of carriage **(provided that such deviation shall be reasonable, having regard to the service in which the ship is engaged)** shall not be deemed to be an infringement or breach of these rules or of the contract of carriage, and the carrier shall not be liable for any loss or damage resulting therefrom.

5. (FOUR) Neither the carrier nor the ship shall be responsible in any event for loss or damage to or in connection with goods in any amount beyond £100 per package or unit, or the equivalent of that sum in other currency unless the nature and value of such goods have been declared by the shipper before the goods are shipped and have been inserted in the bill of lading.

By agreement between the carrier, master or agent of the carrier and the shipper another maximum amount than mentioned in this paragraph may be fixed, provided that such maximum shall not be less than the figures above named.

The declaration by the shipper as to the nature and value of any goods declared shall be prima facie evidence, but shall not be binding or conclusive on the carrier.

6. (FIVE) Neither the carrier nor the ship shall be responsible in any event for loss or damage in connection with goods if the nature or value thereof has been wilfully misstated by the shipper **in the bill of lading.**

7. (SIX) Goods of an inflammable or explosive nature, or of a dangerous nature (UNLESS) the nature and character (THEREOF HAVE BEEN DECLARED IN WRITING BY THE SHIPPER) **whereof are unknown** to the carrier before shipment and **to the shipment whereof** the carrier, master, or agent of the carrier has not consented (TO THEIR SHIPMENT), may at any time before delivery be destroyed or rendered innocuous by the carrier without compensation to the shipper, and the shipper of such goods shall be liable for all damages and expenses directly or indirectly arising out of or resulting from such shipment. If any such goods shipped with such **knowledge and** consent shall become a danger to the ship or cargo, they may in like manner be destroyed or rendered innocuous by the carrier without (COMPENSATION TO THE SHIPPER) **liability on the part of the carrier except to general average if any.**

### Article V

(SEVEN) A carrier shall be at liberty to surrender in whole or in part all or any of his rights and immunities under (THIS ARTICLE) **these rules,** provided such surrender shall be embodied in the bill of lading issued to the shipper.

### Article (FIVE) **VI—Special Conditions**

Notwithstanding the provisions of the preceding articles, a carrier, master or agent of the carrier and a shipper shall in regard to any particular goods be at liberty to enter into any agreement in any terms as to the responsibility and liability of the carrier for such goods, and as to the rights and immunities of the carrier in respect of such goods, or his obligation as to seaworthiness, or the care or diligence of his servants or agents in regard to the **receipt,** handling, loading (STOWING), **stowage, carriage,** custody, care (AND) unloading **and delivery** of the goods carried by sea, provided that in this case no bill of lading **has been or** shall be issued and that the terms agreed shall be embodied in a receipt which shall be a non-negotiable document and shall be marked as such.

Any agreement so entered into shall have full legal effect.

**Provided that this article shall not apply to ordinary commercial shipments made in the ordinary course of trade, but only to other shipments where the character or condition of the property to be carried or the circumstances, terms and conditions under which the carriage is to be performed are such as reasonably to justify a special agreement.**

### Article VII—Limitations on the Application of the Rules

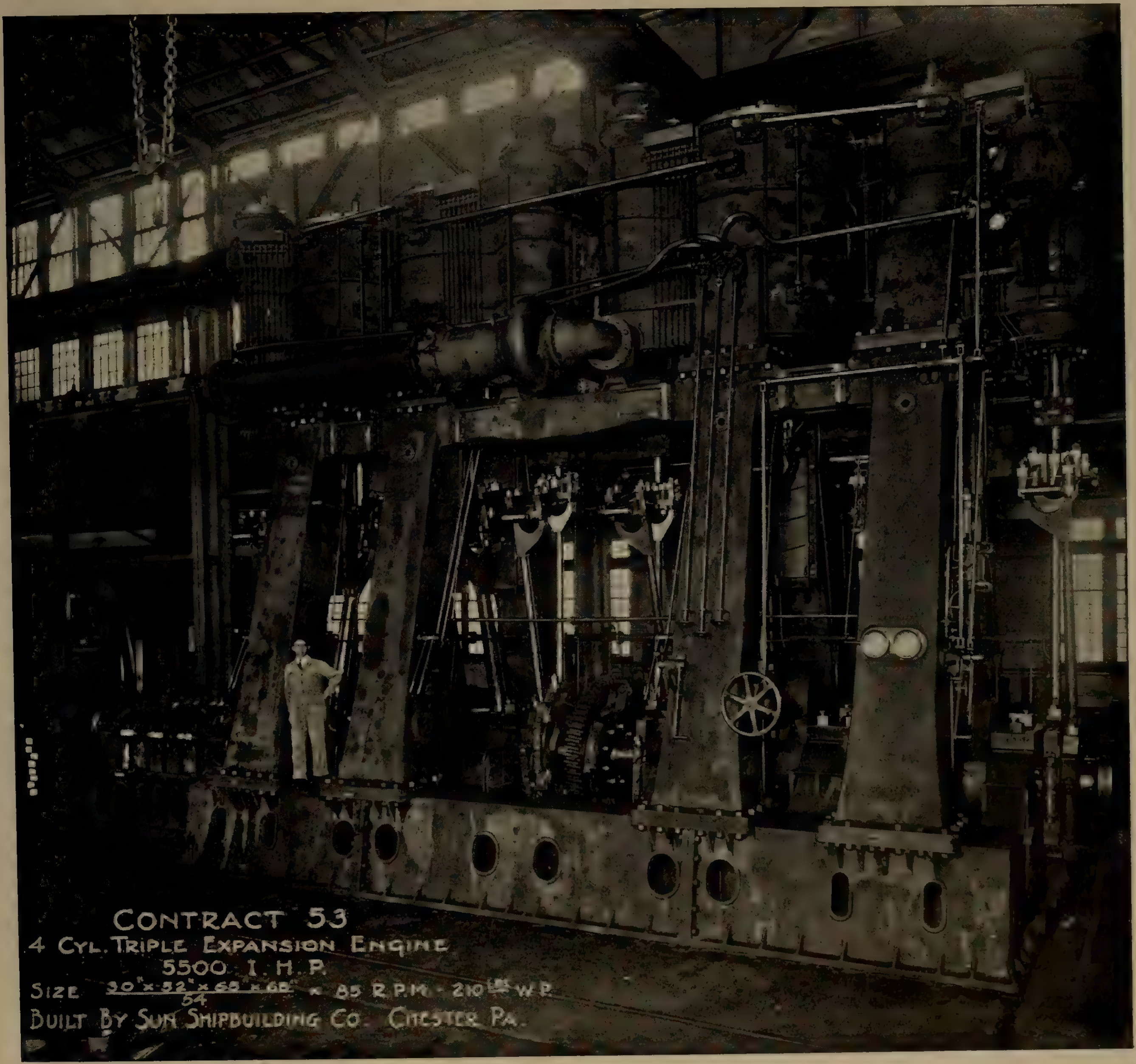
Nothing herein contained shall prevent a carrier or a shipper from entering into any agreement, stipulation, condition, reservation or exemption as to the responsibility and liability of the carrier or the ship for the loss or damage to or in connection with the custody and care and handling of goods prior to the loading on and subsequent to the **delivery** (UNLOADING) from the ship on which the goods are carried by sea.

### Article VIII—Limitation of Liability

The provisions of these rules shall not affect the rights and obligations of the carrier under (THE CONVENTION) **any statute for the time being in force** relating to the limitation of the liability of owners of sea-going vessels.

# THE HALEAKALA NEARS COMPLETION

The passenger steamship Haleakala, building at the yard of the Sun Shipbuilding Company, Chester, Pennsylvania, for the Inter-Island Steam Navigation Company of Honolulu, was launched September 18. Above is shown the Haleakala after launching; below is her great four-cylinder triple-expansion engine of 5500 indicated horsepower. The engine was designed by Sun under its contract with the Inter-Island, which provided that the builders should plan and construct an engine of sufficient power to drive the vessel at a sea speed of 17 knots in all weather. Reciprocating engines of this size are rare nowadays. The Haleakala is named for a quiescent volcano on the Island of Maui, Hawaii. Plans of the vessel were published in the February, 1922, issue of Pacific Marine Review.


CONTRACT 53
4 CYL. TRIPLE EXPANSION ENGINE
5500 I. H. P.
SIZE 30" x 52" x 68 x 68 / 54 x 85 R.P.M. - 210 LBS W.P.
BUILT BY SUN SHIPBUILDING CO. CHESTER PA.

# PANAMA CANAL TRAFFIC IN FISCAL YEAR 1922

## United States Intercoastal Trade First in All Respects. Far Eastern and European Routes are Second and Third

STUDIES of the traffic through the Panama Canal during the fiscal year ending June 30, 1922, and of the relations of that traffic with the movements in preceding years, are presented by the Panama Canal Record. The Record's article is reprinted herewith, except that Tables IV and V (cargo classification) and voluminous data regarding the length, beam and draft of vessels passing through the canal are omitted.

The subjects treated include:

Traffic by trade routes; a comparison of traffic for the fiscal years 1921 and 1922 over the principal trade routes of vessels using the Panama Canal;

Origin and destination of commercial cargo passing through the Panama Canal during the fiscal year 1922;

Commodity statistics, Atlantic to Pacific, fiscal year 1922;

Commodity statistics, Pacific to Atlantic, fiscal year 1922;

Ratio of cargo tonnage to net tonnage of vessels transiting the Panama Canal during the fiscal year 1922;

Length, beam and draft of vessels through the Panama Canal in the fiscal year 1922;

Summary of commercial traffic through the Panama Canal during the fiscal year 1922 since its opening to commercial traffic;

Commercial traffic through the Panama Canal since its opening, classified by nationality of vessels.

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### TRAFFIC BY TRADE ROUTES

A comparison of traffic for the fiscal years 1921 and 1922 over the principal trade routes of vessels using the Panama Canal.

The greatest volume of traffic moving over any trade route during the fiscal year 1922 was that between United States coastwise ports; in point of net tonnage, Panama Canal measurement, and in cargo tonnage, traffic over this route was nearly double that of the preceding year.

The cargo tonnage moving over the United States coastwise route was about equally divided between eastbound and westbound cargo. The leading commodities carried in the Atlantic to Pacific coastwise traffic were iron and steel, coal, sulphur, and miscellaneous manufactured articles of all kinds, while the bulk of the cargo from the west coast ports was made up of lumber, canned goods, oil, metals, and fresh and dried fruits.

Second only to the coastwise trade in volume was the traffic to and from the Far East. Considering the Atlantic to Pacific traffic only, the cargo tonnage over this route exceeded the westbound United States coastwise tonnage by approximately 450,000 cargo tons, and was more than five times as great as the cargo tonnage over any of the remaining great trade routes. Cargo from the Far East to the United States, through the canal, was less for 1922 than for 1921, and ranked seventh in point of cargo tonnage of the Pacific-to-Atlantic trade routes. This one-sided Far East trade is due to the fact that many of the outgoing vessels return by way of the Suez Canal, the 'round-the-world cruise affording a better opportunity to pick up a return cargo than the trip back across the Pacific. The outgoing cargo over this route consists mainly of oils, iron and steel, railroad material, machinery, raw cotton and ammonia, while in return the Far East sends sugar, rice, tea, rubber, wool, cocoanut and vegetable oils.

### Europe-Pacific Coast Third

The third most important trade route through the canal in point of cargo tonnage was that between European ports and the West Coast of the United States. This also is a one-sided trade route, with the bulk of

**Table I.—A Comparison of Commercial Traffic through the Panama Canal by Trade Routes for the Fiscal Years, 1921 and 1922.**

| Trade route. | Fiscal year. | Number of ships. | | | Panama Canal net tonnage. | | | Tons of cargo carried. | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Atlantic to Pacific. | Pacific to Atlantic | Total. | Atlantic to Pacific. | Pacific to Atlantic. | Total. | Atlantic to Pacific. | Pacific to Atlantic. | Total. |
| Between United States coastwise ports | 1921 | 177 | 145 | 322 | 783,420 | 647,557 | 1,430,977 | 698,429 | 673,959 | 1,372,388 |
| | 1922 | 306 | 249 | 555 | 1,524,190 | 1,258,464 | 2,782,654 | 1,288,075 | 1,274,452 | 2,562,527 |
| Between east coast of United States and Far East | 1921 | 187 | 74 | 261 | 915,720 | 351,904 | 1,267,624 | 1,213,906 | 428,044 | 1,641,950 |
| | 1922 | 237 | 47 | 284 | 1,200,570 | 238,136 | 1,438,706 | 1,728,172 | 303,315 | 2,031,487 |
| Between west coast of United States and Europe | 1921 | 80 | 158 | 238 | 383,028 | 782,117 | 1,165,145 | 144,591 | 1,154,840 | 1,299,431 |
| | 1922 | 132 | 173 | 305 | 606,213 | 823,204 | 1,429,417 | 186,696 | 1,302,183 | 1,488,879 |
| Between west coast of South America and Europe | 1921 | 136 | 178 | 314 | 533,323 | 743,148 | 1,276,471 | 297,166 | 922,499 | 1,219,665 |
| | 1922 | 124 | 131 | 255 | 503,733 | 552,972 | 1,056,705 | 283,804 | 663,127 | 946,931 |
| Between east coast of United States and west coast of South America | 1921 | 253 | 239 | 492 | 837,254 | 778,868 | 1,616,122 | 933,261 | 975,597 | 1,908,858 |
| | 1922 | 139 | 144 | 283 | 462,123 | 480,486 | 942,609 | 244,514 | 548,609 | 793,123 |
| Between Australasia and Europe | 1921 | 72 | 100 | 172 | 489,763 | 701,530 | 1,101,293 | 391,848 | 579,745 | 971,59 |
| | 1922 | 84 | 70 | 154 | 565,780 | 425,477 | 991,257 | 359,895 | 381,538 | 741,43 |
| Between west coast of Canada and Europe | 1921 | 14 | 22 | 36 | 64,320 | 103,234 | 167,554 | 20,416 | 154,513 | 174,929 |
| | 1922 | 41 | 56 | 97 | 222,210 | 299,327 | 521,537 | 149,553 | 420,272 | 569,825 |
| Between east coast of United States and Australasia | 1921 | 90 | 27 | 117 | 476,854 | 156,283 | 633,137 | 620,428 | 147,877 | 768,305 |
| | 1922 | 53 | 13 | 66 | 270,137 | 55,343 | 325,480 | 288,090 | 45,957 | 334,047 |
| Between east coast of Mexico and west coast of South America | 1921 | 77 | 79 | 156 | 383,466 | 400,455 | 783,921 | 654,659 | 230 | 654,889 |
| | 1922 | 30 | 25 | 55 | 146,200 | 123,706 | 269,906 | 256,562 | .......... | 256,562 |
| Between west coast of Canada and east coast of United States | 1921 | 13 | 9 | 22 | 59,598 | 45,187 | 104,785 | 82,827 | 47,729 | 130,556 |
| | 1922 | 19 | 30 | 49 | 91,667 | 146,111 | 237,778 | 88,408 | 159,921 | 248,329 |
| Between Cristobal, C. Z., and west coast of South America | 1921 | 151 | 155 | 306 | 228,108 | 237,486 | 465,594 | 85,190 | 139,547 | 224,737 |
| | 1922 | 122 | 124 | 246 | 180,876 | 185,413 | 366,289 | 32,370 | 85,531 | 117,901 |
| Between east coast of United States and Balboa, C. Z. | 1921 | 12 | 9 | 21 | 59,743 | 51,448 | 111,191 | 90,525 | .......... | 90,525 |
| | 1922 | 12 | 4 | 16 | 54,678 | 28,446 | 83,124 | 57,142 | .......... | 57,142 |
| Between east coast of Mexico and west coast of United States | 1921 | 27 | 40 | 67 | 143,046 | 204,977 | 348,023 | 261,205 | 8,155 | 269,360 |
| | 1922 | 6 | 12 | 18 | 26,048 | 64,337 | 90,385 | 39,500 | 3,233 | 42,533 |
| Between Cristobal, C. Z., and west coast of United States | 1921 | 24 | 23 | 47 | 43,578 | 41,976 | 85,554 | 32,048 | 14,578 | 46,626 |
| | 1922 | 17 | 18 | 35 | 33,575 | 41,948 | 75,523 | 28,300 | 16,304 | 44,704 |
| Between Cristobal, C. Z., and west coast of Central America | 1921 | 32 | 39 | 71 | 21,013 | 25,733 | 46,746 | 15,227 | 17,378 | 32,605 |
| | 1922 | 28 | 30 | 58 | 23,173 | 25,254 | 48,427 | 15,961 | 21,230 | 37,191 |
| Miscellaneous trade routes | 1921 | 112 | 122 | 234 | 318,668 | 403,071 | 721,739 | 350,352 | 442,445 | 792,797 |
| | 1922 | 154 | 92 | 246 | 492,999 | 264,663 | 757,602 | 449,092 | 163,204 | 612,296 |
| Warships, etc | 1921 | 14 | 2 | 16 | (1) | (2) | (3) | .......... | .......... | .......... |
| | 1922 | 5 | 9 | 14 | (4) | (5) | (6) | .......... | .......... | .......... |
| Totals | 1921 | 1,471 | 1,421 | 2,392 | 5,740,902 | 5,674,974 | 11,415,876 | 5,892,078 | 5,707,136 | 11,599,214 |
| | 1922 | 1,509 | 1,227 | 2,736 | 6,404,172 | 5,013,287 | 11,417,459 | 5,495,934 | 5,388,976 | 10,884,910 |

[1] Displacement tonnage, 87,473. [2] Displacement tonnage, 36,888. [3] Displacement tonnage, 124,361. [4] Displacement tonnage, 37,267. [5] Displacement tonnage, 60,914. [6] Displacement tonnage, 98,181.

**Table II.—Origin and Destination of all Commercial Cargo Passing Through the Panama Canal from the Atlantic to the Pacific. Fiscal Year 1922.**

(Figures represent tons of 2,240 pounds.)

| | | From— | | | | | | | | To— | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Totals. | West Indies. | South America, east coast. | Canada, east coast. | Mexico, east coast. | Cristobal C. Z. | Other European. | British Isles. | East coast of United States. | South America, west coast. | United States, west coast. | Far East. | Australasia. | Canada, west coast. | Central America, west coast. | Balboa, C. Z. | Hawaii. | Miscellaneous. |
| 1921. | | | | | | | | | | | | | | | | | | |
| July | 258,440 | ........ | 669 | 396 | 26,624 | 6,415 | 24,339 | 21,271 | 178,726 | 37,743 | 92,115 | 70,789 | 39,409 | 2,563 | 8,315 | 950 | 5,663 | 893 |
| August | 317,970 | 7,000 | 2,105 | ........ | 26,718 | 6,634 | 13,699 | 24,013 | 237,801 | 56,422 | 59,812 | 116,429 | 47,416 | 7,759 | 1,128 | 28,114 | 890 | ........ |
| September | 300,720 | 2,013 | 4,950 | 3,280 | 17,889 | 7,274 | 14,340 | 29,820 | 221,154 | 31,906 | 86,516 | 115,561 | 42,866 | 5,704 | 3,729 | 12,038 | 2,400 | ........ |
| October | 374,437 | ........ | 5,313 | 3,398 | 45,809 | 6,610 | 21,320 | 49,100 | 242,887 | 40,964 | 119,102 | 132,638 | 56,467 | 16,347 | 8,443 | ........ | 476 | ........ |
| November | 386,681 | ........ | 498 | ........ | 29,300 | 7,450 | 18,974 | 74,678 | 255,781 | 37,161 | 133,760 | 123,439 | 70,059 | 2,030 | 2,989 | 9,000 | 8,243 | ........ |
| December | 517,110 | 11,743 | 9,439 | 4,343 | 40,300 | 7,158 | 43,647 | 63,926 | 336,554 | 62,582 | 125,285 | 210,010 | 66,854 | 7,433 | 5,021 | 25,672 | 11,028 | 3,225 |
| Half year | 2,155,358 | 20,756 | 22,974 | 11,417 | 186,640 | 41,541 | 136,319 | 262,808 | 1,472,903 | 266,778 | 616,590 | 768,866 | 323,071 | 41,836 | 29,625 | 75,774 | 28,700 | 4,118 |
| 1922. | | | | | | | | | | | | | | | | | | |
| January | 493,591 | 37,515 | 3,675 | 1,783 | 54,675 | 8,072 | 25,209 | 73,381 | 289,281 | 74,514 | 136,275 | 150,439 | 74,229 | 28,166 | 5,929 | 10,540 | 13,499 | ........ |
| February | 442,825 | 12,790 | 7,014 | 3,415 | 41,737 | 6,063 | 14,346 | 54,731 | 302,729 | 77,958 | 130,128 | 154,156 | 63,709 | 7,376 | 2,798 | 6,700 | ........ | ........ |
| March | 581,952 | 30,726 | 354 | 750 | 31,582 | 7,389 | 36,311 | 66,262 | 408,578 | 65,004 | 176,064 | 219,013 | 65,285 | 34,608 | 2,967 | 8,270 | 6,099 | 4,642 |
| April | 562,433 | 36,139 | 7,521 | 2,463 | 29,100 | 6,434 | 37,933 | 63,510 | 379,333 | 98,496 | 184,819 | 183,072 | 58,400 | 10,044 | 2,520 | 10,535 | 14,547 | ........ |
| May | 673,398 | 11,600 | 7,006 | 2,846 | 48,946 | 8,097 | 43,731 | 44,842 | 506,330 | 114,145 | 226,671 | 268,832 | 44,724 | 10,426 | 6,484 | 333 | 120 | 1,663 |
| June | 586,377 | 7,538 | 5,891 | 2,500 | 42,488 | 7,076 | 31,339 | 77,258 | 412,287 | 117,484 | 202,362 | 145,951 | 69,034 | 15,849 | 1,652 | 15,963 | 8,100 | 9,982 |
| Half year | 3,340,576 | 136,308 | 31,461 | 13,757 | 248,528 | 43,131 | 188,869 | 379,984 | 2,298,538 | 547,601 | 1,056,319 | 1,121,463 | 375,381 | 106,469 | 22,350 | 52,341 | 42,365 | 16,287 |
| Fiscal year | 5,495,934 | 157,064 | 54,435 | 25,174 | 435,168 | 84,672 | 325,188 | 642,792 | 3,771,441 | 814,379 | 1,672,909 | 1,890,329 | 698,452 | 148,305 | 51,975 | 128,115 | 71,065 | 20,405 |
| Per cent of total cargo: | | | | | | | | | | | | | | | | | | |
| 1922 | 100.0 | 2.9 | 1.0 | 0.5 | 7.9 | 1.5 | 5.9 | 11.7 | 68.6 | 14.8 | 30.5 | 34.4 | 12.7 | 2.7 | 0.9 | 2.3 | 1.3 | 0.4 |
| 1921 | .......... | 1.6 | 0.5 | 0.7 | 18.2 | 2.3 | 4.5 | 9.3 | 63.0 | 32.9 | 20.0 | 22.3 | 18.4 | 2.1 | 0.8 | 3.3 | ........ | 0.2 |

the traffic moving from the Pacific to the Atlantic. In point of cargo tonnage this route exceeded that of any other Pacific-to-Atlantic trade route through the canal, but the Atlantic-to-Pacific traffic over this route ranked eighth in point of cargo tonnage. Wheat, barley, flour, lumber, oils and canned goods made up the bulk of the eastbound traffic over this route, while in return Europe sent principally iron, coal, glassware and miscellaneous small manufactured articles.

Traffic between Europe and the West Coast of South America ranked fourth in point of volume and showed a decrease of approximately 30 per cent from that of the preceding year. This decrease was most marked in the traffic from South America to Europe, as the cargo tonnage from Europe to South America was about the same as for the preceding year. South American exports over this route were principally nitrate, barley, raw cotton, cottonseed meal and cake, copper, sugar and ivory nuts, while the more important imports were coal, coke, iron and steel, textiles, olive oil, and small manufactured articles.

Exceeding in volume all other trade routes for the fiscal year 1921, traffic between the East Coast of the United States and the West Coast of South America dropped off approximately 60 per cent in 1922 and ranked fifth in point of cargo tonnage among the trade routes through the canal. Cargo tonnage southbound over this route was but little more than 25 per cent of the total cargo for the preceding year. While the slump in the nitrate trade, together with adverse exchange rates and the general business depression, were the primary factors in the decreased traffic, South American trade with Europe showed no such a marked decrease. United States exports over this route were chiefly coal, iron and steel, cement and miscellaneous manufactured goods, and in return South America exported nitrate, copper, iron and tin ores, cacao, coffee, and ivory nuts.

### Australasia-Europe Trade

Sixth among the trade routes through the canal in cargo tonnage was that between Australasia and Europe. Traffic over this route also showed a decline from the preceding year, particularly in the Pacific-to-Atlantic trade. In view of the fact that tonnage from Europe to Australasia routed through the canal showed but a slight decrease from the preceding year, the loss in the Pacific-to-Atlantic trade over this route must be attributed to other factors than a mere falling off in trade. The cost of bunker coal, the opportunity of picking up additional cargo or passengers at ports of call en route home, national interests, etc., might easily be the determining factor in causing a vessel to select the Cape Horn, Cape of Good Hope or Suez Canal route on her homeward voyage. Outgoing cargo over this route consisted chiefly of coal, iron and steel, machinery, railroad material, textiles, etc., while on return voyages from Australasia the ships carried principally wheat, wool, copra, phosphates, cold storage and food products.

Traffic between the West Coast of Canada and Europe and between the West Coast of Canada and the East Coast of the United States increased greatly during the past year. It is difficult to differentiate in the traffic between the West Coast of Canada and the West Coast of the United States, as the majority of the vessels in the Canadian traffic also load and discharge cargo at United States ports. Statistics kept year by year, however, in the same manner offer a fair comparison and the fiscal year 1922 shows a very considerable increase over the preceding year.

Traffic between the East Coast of Mexico and the West Coast of South America was but a little more than one-third that for the preceding year, and consisted entirely of fuel oil shipments from Mexico to South America, with the tankers returning in ballast.

Cargo tonnage carried between Cristobal, Canal Zone, and the West Coast of South America also showed a marked decline and was but little more than one-half of the volume carried the preceding year. Practically all of this was cargo transshipped at the Atlantic terminus of the canal.

Table I shows the number of ships passing through the canal in 1922, over the principal trade routes, together with their aggregate net tonnage, Panama Canal measurement, and tons of cargo carried.

## ORIGIN AND DESTINATION OF COMMERCIAL CARGO PASSING THROUGH THE PANAMA CANAL DURING FISCAL YEAR 1922

Tables II and III give a much better index as to the actual movement of cargo tonnage in transit through the canal than can be obtained by a study of the table on trade routes, as vessels often traverse a wide area in picking up and discharging their cargoes.

### Coastwise Trade Important

Of the total cargo tonnage carried through the canal from the Atlantic to the Pacific it will be seen that more than two-thirds originated on the Atlantic and Gulf seaboard of the United States. Cargo from the British Isles was next in importance and formed a little more than one-tenth of the whole, and was practically twice the amount of cargo originating from Continental Europe. The East Coast of Mexico furnished approximately one-twelfth of the westbound cargo tonnage through the canal, practically all of which was fuel oil; this was a marked decrease from 1921, when 18.2 of the total Atlantic-to-Pacific cargo tonnage routed through the canal originated on the East Coast of Mexico.

Of the total Atlantic-to-Pacific cargo routed through the Canal a little more than one-third was destined for the Far East as compared with approximately one-fifth for the preceding year. Cargo routed to the West Coast of the United States showed approximately a 50 per cent increase over the fiscal year 1921 and represented 30 per cent of the total westbound cargo. Cargo in transit through the canal to the West Coast of South America represented but one-seventh of the total for the past fiscal year as compared with one-third of the total for the fiscal year 1921. Cargo routed to Australasia through the canal also showed a decline and the total tonnage was only about two-thirds as great as for the preceding year.

During the past fiscal year more than one-half of the eastbound cargo routed through the canal originated on the West Coast of the United States, as compared with approximately one-third for the preceding fiscal year. Cargo from the West Coast of South America came next in volume and represented approximately one-fourth of the total as compared with two-fifths for the fiscal year 1921. Australasia contributed 8.2 per cent of the total Pacific-to-Atlantic cargo, and the Far East 6 per cent, both showing a loss in cargo tonnage from the preceding year.

Of the total Pacific-to-Atlantic cargo through the canal, 42.7 per cent was routed to the East Coast of the United States, 31.1 per cent to the British Isles, and 22.1 per cent to Continental Europe. More than one-half of the remaining 4 per cent was destined for Cristobal, with the rest scattered.

### Commodity Statistics, Atlantic to Pacific

From the cargo declarations and copies of the ships' manifests submitted, it was possible to classify a little more than 80 per cent of the total cargo in transit through the canal from the Atlantic to the Pacific; of the 20 per cent unclassified commodities a considerable portion consisted of miscellaneous small manufactured articles of all descriptions, listed as "general."

Commodities carried westbound through the canal whose combined shipments for the year aggregated 100,000 cargo tons or over were as follows:

| COMMODITY | Tons of 2240 pounds |
|---|---|
| Manufactured goods (including iron and steel, railroad material, machinery, textiles, etc.) | 1,403,411 |
| Oils (including crude, refined, vegetable, etc.) | 988,829 |
| Coal and coke | 404,389 |
| Cotton, raw | 198,684 |
| Metals, various | 174,104 |
| Sugar | 155,409 |
| Sulphur | 100,449 |

The above seven commodities made up more than 60 per cent of the total westbound cargo through the canal during the past fiscal year.

Detailed commodity statistics, as shown herewith, were not kept prior to January 1, 1921, so that comparative statistics with preceding fiscal years cannot be compiled. Comparing the last half of the past fiscal year, however, with the last half of the fiscal year 1921, we have the following:

| COMMODITY | Last six months of fiscal year—Cargo tons 1921 | 1922 |
|---|---|---|
| Iron and steel, including all structural material, plates, bars, angles, etc. | 371,462 | 742,613 |
| Oil, crude | 684,177 | 270,165 |
| Oil, refined | 281,084 | 268,311 |
| Coal and coke | 370,160 | 235,188 |
| Sugar | 80,236 | 142,604 |
| Metals, various | 32,645 | 110,479 |
| Railroad material | 45,929 | 100,170 |
| Machinery | 52,214 | 88,731 |
| Sulphur | 71,014 | 63,048 |
| Cotton | 43,411 | 45,766 |

### Commodity Statistics, Pacific to Atlantic

From the cargo declarations submitted by vessels transiting the canal eastbound, it was possible to classify 93 per cent of the total cargo passing from the Pacific to the Atlantic. Commodities, whose combined shipments for the fiscal year aggregated 100,000 tons or more, were as follows:

| COMMODITY | Tons of 2240 pounds |
|---|---|
| Wheat | 804,736 |
| Lumber | 720,622 |
| Nitrate | 470,796 |
| Barley | 418,234 |
| Canned goods (fish, fruit, vegetables, etc.) | 344,601 |
| Oils, various | 296,394 |
| Sugar | 257,967 |
| Cold storage food products | 193,396 |
| Metals, various | 179,582 |
| Ores | 156,136 |
| Wool | 148,103 |
| Flour | 130,217 |

The above twelve commodities comprised more than three-fourths of all the Pacific-to-Atlantic cargo transported through the canal during the past fiscal year.

Comparing the last six months of 1922 with the last six months of the preceding fiscal year on shipments of the leading commodities through the canal, we have the following:

| COMMODITY | Last six months of fiscal year—Cargo tons 1921 | 1922 |
|---|---|---|
| Lumber | 204,804 | 477,339 |
| Wheat | 385,560 | 275,419 |
| Nitrate | 749,873 | 228,902 |
| Oils, various | 127,971 | 175,632 |
| Canned goods, various | 52,218 | 128,163 |
| Ores, various | 65,638 | 108,987 |
| Metals | 76,065 | 101,005 |
| Wool | 58,070 | 99,098 |
| Sugar | 105,145 | 92,160 |
| Cold storage food products | 186,920 | 79,916 |
| Barley | 95,347 | 78,100 |
| Coffee | 41,258 | 62,672 |
| Flour | 77,310 | 30,550 |

### Ratio of Cargo Tonnage to Net

The average ratio of cargo tonnage to net tonnage for all cargo-carrying vessels transiting the canal during the fiscal year 1922 was 0.95 of a cargo ton of 2240 pounds to each net ton, Panama Canal measurement. Excluding the vessels transiting the canal in ballast, the average ratio for all laden vessels was 1.06 cargo tons for each net ton.

Segregating the Atlantic-to-Pacific traffic, the ratio

**Table III.—Origin and Destination of all Commercial Cargo Passing Through the Panama Canal from the Pacific to the Atlantic. Fiscal Year 1922.**

(Figures represent tons of 2,240 pounds.)

| | Totals. | From— | | | | | | | | To— | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Miscellaneous. | Hawaiian Islands. | West coast of Central America. | West coast of Canada. | Australasia. | Far East. | West coast of United States. | West coast of South America. | West coast of United States. | British Isles. | Other European. | Cristobal C. Z. | East coast of Canada. | West Indies. | East coast of South America. | Africa. | Miscellaneous. |
| 1921. | | | | | | | | | | | | | | | | | | |
| July | 450,542 | ........ | 33,305 | 4,922 | 8,559 | 63,747 | 39,860 | 222,647 | 77,502 | 164,736 | 165,229 | 102,416 | 11,167 | 3,246 | 3,540 | 208 | ........ | ........ |
| August | 521,303 | 302 | 29,700 | 4,785 | 4,978 | 56,462 | 29,308 | 293,564 | 102,204 | 206,254 | 205,364 | 87,038 | 13,407 | 1,705 | 3,969 | 724 | ........ | 2,842 |
| September | 454,174 | ........ | 14,766 | 1,120 | 6,217 | 26,020 | 11,516 | 319,197 | 75,338 | 145,522 | 169,234 | 121,829 | 11,989 | ........ | 4,896 | 704 | ........ | ........ |
| October | 611,338 | ........ | 9,629 | 1,944 | 14,658 | 36,605 | 55,373 | 372,518 | 120,611 | 180,811 | 202,843 | 193,093 | 14,711 | 123 | 5,073 | 30 | 9,500 | 5,154 |
| November | 468,759 | ........ | 2,930 | 412 | 11,009 | 5,775 | 29,574 | 293,815 | 125,244 | 179,807 | 87,828 | 183,903 | 8,512 | ........ | 5,221 | 488 | ........ | ........ |
| December | 435,943 | ........ | 5,981 | 2,600 | 4,669 | 37,528 | 30,478 | 206,259 | 148,428 | 170,110 | 118,153 | 128,243 | 11,780 | 682 | 4,435 | 14 | ........ | 2,526 |
| Half year | 2,942,059 | 302 | 96,311 | 15,783 | 50,090 | 226,137 | 196,109 | 1,708,000 | 649,327 | 1,047,240 | 948,651 | 819,522 | 71,566 | 5,756 | 27,134 | 2,168 | 9,500 | 10,522 |
| 1922. | | | | | | | | | | | | | | | | | | |
| January | 313,707 | ........ | 8,055 | 4,197 | 11,268 | 29,079 | 14,915 | 155,218 | 90,975 | 155,948 | 95,763 | 53,426 | 5,611 | ........ | 2,285 | 674 | ........ | ........ |
| February | 395,249 | 11,072 | 7,496 | 7,839 | 40,400 | 39,881 | 8,258 | 169,602 | 110,701 | 172,536 | 157,005 | 53,459 | 9,609 | 2 | 2,193 | 445 | ........ | ........ |
| March | 378,137 | 4,856 | 311 | 15,418 | 30,822 | 47,598 | 14,057 | 187,009 | 78,066 | 194,446 | 112,716 | 57,067 | 11,749 | 580 | 963 | ........ | ........ | 616 |
| April | 483,614 | ........ | 228 | 12,207 | 11,127 | 62,754 | 33,874 | 211,663 | 151,761 | 253,384 | 155,719 | 62,453 | 18,399 | 116 | 5,030 | 2,293 | 4,581 | 1,639 |
| May | 485,109 | 20,944 | ........ | 17,590 | 16,077 | 24,134 | 35,955 | 233,967 | 136,442 | 245,877 | 136,466 | 84,924 | 13,380 | 67 | 3,178 | 417 | ........ | 809 |
| June | 391,101 | 29,541 | ........ | 7,553 | 21,197 | 9,940 | 19,936 | 202,360 | 100,574 | 226,284 | 90,266 | 56,349 | 14,571 | ........ | 2,704 | 927 | ........ | ........ |
| Half year | 2,446,917 | 66,413 | 16,090 | 64,804 | 130,891 | 213,386 | 126,995 | 1,159,819 | 668,519 | 1,248,475 | 727,935 | 367,678 | 73,319 | 765 | 16,353 | 4,756 | 4,581 | 3,055 |
| Fiscal year | 5,388,976 | 66,715 | 112,401 | 80,587 | 180,981 | 439,523 | 323,104 | 2,867,819 | 1,317,846 | 2,295,715 | 1,676,586 | 1,187,200 | 144,885 | 6,521 | 43,487 | 6,924 | 14,081 | 13,577 |
| Per cent of total cargo: | | | | | | | | | | | | | | | | | | |
| 1922 | 100.0 | 1.2 | 2.1 | 1.5 | 3.3 | 8.2 | 6.0 | 53.2 | 24.5 | 42.7 | 31.1 | 22.1 | 2.7 | 0.1 | 0.8 | 0.1 | 0.2 | 0.2 |
| 1921 | 100.0 | 0.1 | 1.1 | 0.9 | 2.2 | 12.7 | 8.9 | 34.1 | 40.0 | 39.4 | 30.9 | 19.6 | 3.4 | 0.3 | 2.7 | 1.4 | 1.3 | 1.0 |

of cargo tonnage to net tonnage was 0.86 for all vessels, and for laden vessels only the ratio was 0.98; while from the Pacific to the Atlantic the ratio of cargo tonnage to net tonnage for all vessels was 1.07, and for laden vessels only, 1.16 cargo tons per net ton, Panama Canal measurement.

The following table shows the ratio of cargo tonnage to net tonnage for vessels of all nationalties, giving the ratio both for all cargo-carrying vessels and for laden vessels only:

RATIO OF CARGO TONNAGE TO NET TONNAGE OF ALL VESSELS TRANSITING THE PANAMA CANAL DURING THE FISCAL YEAR 1922

| | Panama Canal net tonnage | | Total cargo tonnage carried | Ratio cargo tonnage to net tonnage | |
|---|---|---|---|---|---|
| | Of vessels in ballast | Laden vessels only | | Including vessels in ballast | Laden vessels only |
| British | 456,775 | 3,305,437 | 3,329,861 | 0.877 | 1.007 |
| Chilean | ............ | 150,398 | 46,182 | .307 | .307 |
| Costa Rican | 8 | ............ | ............ | ....... | ....... |
| Danish | 24,910 | 202,563 | 272,779 | 1.199 | 1.346 |
| Dutch | 17,779 | 275,649 | 290,573 | .990 | 1.054 |
| French | 9,238 | 180,933 | 139,463 | .733 | .771 |
| German | ............ | 122,893 | 121,888 | .992 | .992 |
| Greek | 11,189 | 7,429 | 11,956 | .642 | 1.609 |
| Italian | ............ | 73,393 | 38,851 | .529 | .529 |
| Japanese | 138,847 | 733,619 | 1,044,515 | 1.197 | 1.424 |
| Mexican | 1,880 | 78 | 10 | .128 | .128 |
| Norwegian | 90,106 | 294,901 | 408,268 | 1.060 | 1.384 |
| Panaman | 207 | 307 | 526 | .751 | 1.713 |
| Peruvian | ............ | 161,930 | 64,370 | .397 | .397 |
| Spanish | 13,901 | 13,363 | 23,701 | .869 | 1.774 |
| Swedish | 9,630 | 114,816 | 141,448 | 1.137 | 1.232 |
| U. S. | 348,323 | 4,617,984 | 4,950,519 | .996 | 1.072 |
| Totals | 1,122,803 | 10,255,693 | 10,884,910 | .953 | 1.061 |

## SUMMARY OF COMMERCIAL TRAFFIC THROUGH THE PANAMA CANAL DURING THE FISCAL YEAR 1922 AND SINCE ITS OPENING TO COMMERCIAL TRAFFIC

For the first half of the fiscal year 1922 the traffic through the canal from the Pacific to the Atlantic in point of number of ships and tonnage was practically on a par with the traffic from the Atlantic to the Pa-

**Table VI.—Summary of Commercial Traffic Through the Panama Canal During the Fiscal Year 1922 and since its Opening to Commercicial Traffic.**

| | ATLANTIC TO PACIFIC. | | | | PACIFIC TO ATLANTIC. | | | | TOTAL. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Vessels. | Tonnage. | | Tons of cargo. | Vessels. | Tonnage. | | Tons of cargo. | Vessels. | Tonnage. | | Tons of cargo. |
| | | Registered gross. | Registered net. | | | Registered gross. | Registered net. | | | Registered gross. | Registered net. | |
| 1921. | | | | | | | | | | | | |
| July | 105 | 508,670 | 403,051 | 258,440 | 101 | 514,132 | 407,562 | 450,542 | 206 | 1,022,802 | 810,613 | 708,982 |
| August | 120 | 607,852 | 487,219 | 317,970 | 116 | 611,965 | 478,057 | 521,303 | 236 | 1,219,817 | 965,276 | 839,273 |
| September | 128 | 669,087 | 530,634 | 300,720 | 93 | 498,133 | 394,503 | 454,174 | 221 | 1,167,220 | 925,137 | 754,894 |
| October | 131 | 708,363 | 571,175 | 374,437 | 124 | 627,449 | 498,379 | 611,338 | 255 | 1,335,812 | 1,069,554 | 985,775 |
| November | 123 | 671,741 | 539,017 | 386,681 | 99 | 512,416 | 403,394 | 468,759 | 222 | 1,184,157 | 942,411 | 855,440 |
| December | 135 | 720,502 | 575,669 | 517,110 | 104 | 563,997 | 441,575 | 435,943 | 239 | 1,284,499 | 1,017,244 | 953,053 |
| Total for first half of fiscal year | 742 | 3,886,215 | 3,106,765 | 2,155,358 | 637 | 3,328,092 | 2,623,470 | 2,942,059 | 1,379 | 7,214,307 | 5,730,235 | 5,097,417 |
| 1922. | | | | | | | | | | | | |
| January | 125 | 646,371 | 513,764 | 493,591 | 85 | 423,469 | 332,752 | 313,707 | 210 | 1,069,840 | 846,516 | 807,298 |
| February | 114 | 605,323 | 488,005 | 442,825 | 98 | 499,713 | 398,530 | 395,249 | 212 | 1,105,036 | 886,535 | 838,074 |
| March | 138 | 724,316 | 586,041 | 581,952 | 96 | 502,655 | 389,770 | 378,137 | 234 | 1,286,971 | 975,811 | 960,089 |
| April | 121 | 650,055 | 520,688 | 562,433 | 109 | 569,283 | 454,145 | 483,614 | 230 | 1,219,338 | 974,833 | 1,046,047 |
| May | 134 | 742,419 | 594,713 | 673,398 | 109 | 555,134 | 438,103 | 485,109 | 243 | 1,297,553 | 1,032,816 | 1,158,507 |
| June | 135 | 752,082 | 594,196 | 586,377 | 93 | 475,956 | 376,517 | 391,101 | 228 | 1,228,038 | 970,713 | 977,478 |
| Total for second half of fiscal year | 767 | 4,120,566 | 3,297,407 | 3,340,576 | 590 | 3,026,210 | 2,389,817 | 2,446,917 | 1,357 | 7,146,776 | 5,687,224 | 5,787,493 |
| Total for fiscal year 1922 | 1,509 | 8,006,781 | 6,404,172 | 5,495,934 | 1,227 | 6,354,302 | 5,013,287 | 5,388,976 | 2,736 | 14,361,083 | 11,417,459 | 10,884,910 |
| Fiscal year ending June 30, 1915 | 522 | 2,657,865 | 1,860,276 | 2,070,993 | 553 | 2,758,922 | 1,932,296 | 2,817,461 | 1,075 | 5,416,787 | 3,792,572 | 4,888,454 |
| Fiscal year ending June 30, 1916 | 396 | 1,912,846 | 1,277,728 | 1,369,019 | 362 | 1,683,683 | 1,118,434 | 1,725,095 | 758 | 3,596,529 | 2,396,162 | 3,094,114 |
| Fiscal year ending June 30, 1917 | 874 | 4,170,733 | 2,819,848 | 2,929,260 | 929 | 4,360,088 | 2,978,709 | 4,129,303 | 1,803 | 8,530,821 | 5,798,557 | 7,058,563 |
| Fiscal year ending June 30, 1918 | 915 | 3,938,042 | 2,736,542 | 2,630,300 | 1,154 | 5,433,297 | 3,837,531 | 4,892,731 | 2,069 | 9,371,339 | 6,574,073 | 7,532,031 |
| Fiscal year ending June 30; 1919 | 857 | 3,458,417 | 2,673,958 | 2,740,254 | 1,167 | 4,418,186 | 3,451,032 | 4,176,367 | 2,024 | 7,876,603 | 6,124,990 | 6,916,621 |
| Fiscal year ending June 30, 1920 | 1,180 | 5,391,567 | 4,168,873 | 4,092,516 | 1,298 | 5,668,252 | 4,377,171 | 5,281,983 | 2,478 | 11,059,819 | 8,546,044 | 9,374,499 |
| Fiscal year ending June 30, 1921 | 1,471 | 7,287,556 | 5,740,902 | 5,892,078 | 1,421 | 7,234,859 | 5,674,974 | 5,707,136 | 2,892 | 14,522,415 | 11,415,876 | 11,599,214 |
| Fiscal year ending June 30, 1922 | 1,509 | 8,006,781 | 6,404,172 | 5,495,934 | 1,227 | 6,354,302 | 5,013,287 | 5,388,976 | 2,736 | 14,361,083 | 11,417,459 | 10,884,910 |
| Totals | 7,724 | 36,823,807 | 27,682,299 | 27,229,354 | 8,111 | 37,911,589 | 28,383,434 | 34,119,052 | 15,835 | 74,735,396 | 56,065,733 | 61,348,406 |

cific, and in cargo tonnage was greater; but for the last half of the fiscal year, both in cargo tonnage and registered tonnage, the Atlantic-to-Pacific traffic was greater by approximately a third.

This preponderance of traffic from the Atlantic to the Pacific is due chiefly to the fact that many ships passing through the canal laden with cargo for Australasia and the Orient find it more advantageous to return by some other route. During the past fiscal year the tonnage returning from the Orient by way of the Panama Canal was approximately only a fifth of the tonnage bound for the Orient by this route.

However, it is only within the past two years that the volume of the Atlantic-to-Pacific traffic has exceeded that from the Pacific to the Atlantic, and only within the past six months that the difference has been so striking. In the earlier years of canal traffic the Pacific-to-Atlantic tonnage was the greater, and by taking the aggregate tonnage passing through the canal since its opening it will be seen that the total tonnage passing through the canal from the Pacific to the Atlantic slightly exceeds that in the other direction.

The considerable reduction in the Pacific-to-Atlantic traffic during the past fiscal year was due to a marked decline in tonnage from South America, Australasia and the Far East. Tonnage from these areas was approximately only 60 per cent of that for the preceding year. Tonnage from the West Coast of United States, Canada, Central America and Mexico, on the other hand, showed a considerable increase.

Table VI shows the number of vessels transiting the canal since its opening to commerce, segregated between Atlantic to Pacific and Pacific to Atlantic, and shows their registered gross and net tonnage, together with the amount of cargo carried.

## COMMERCIAL TRAFFIC THROUGH THE PANAMA CANAL SINCE ITS OPENING, CLASSIFIED BY NATIONALITY OF VESSELS

For the fiscal year ending June 30, 1922, American vessels transiting the canal exceeded those of any other nationality, numbering 1095 out of a total of 2736 vessels, or approximately two out of five. Vessels of United States registry furnished 43½ per cent of the total tonnage and carried approximately 45 per cent of all cargo transported through the canal.

Vessels of British registry were a close second, numbering 935, or approximately one out of three. British vessels furnished practically one-third of all tonnage through the canal during the past fiscal year, and carried approximately 30 per cent of the total cargo routed through the canal.

Vessels of Japanese registry ranked third in point of numbers with 189 vessels, and comprised approximately 8 per cent of the total tonnage, and carried approximately 10 per cent of the total cargo through the canal during the past fiscal year. Japanese tonnage routed through the canal during 1922 showed a 40 per cent increase over the preceding fiscal year.

Vessels of Norwegian registry were fourth in point of numbers, tonnage and tons of cargo carried. For 1922, vessels of Norwegian registry comprised 3.3 per cent of the total tonnage as compared with 4.8 per cent for the fiscal year 1921.

TABLE VII.—STATEMENT SHOWING THE NUMBER OF VESSELS, THE PANAMA CANAL NET TONNAGE, TOLLS ASSESSED, AND TONS OF CARGO CARRIED BY VESSELS OF THE PRINCIPAL NATIONS PASSING THROUGH THE PANAMA CANAL DURING THE FIRST 8 YEARS OF ITS OPERATION.

| Nationality. | Year. | No. of ships. | Panama Canal net tonnage. | Tolls. | Tons of cargo. |
|---|---|---|---|---|---|
| United States | 1915 | 459 | 1,700,145 | $2,002,845.77 | 2,187,904 |
| | 1916 | 213 | 652,989 | 724,219.01 | 848,857 |
| | 1917 | 404 | 1,239,492 | 1,238,322.63 | 1,475,725 |
| | 1918 | 567 | 1,704,040 | 1,713,827.23 | 2,098,277 |
| | 1919 | 784 | 2,257,342 | 2,327,261.48 | 2,758,886 |
| | 1920 | 1,129 | 3,791,088 | 3,805,924.77 | 4,547,140 |
| | 1921 | 1,210 | 4,861,761 | 4,784,577.35 | 5,163,025 |
| | 1922 | 1,095 | 4,971,509 | 4,867,495.81 | 4,950,519 |
| Totals | ........ | 5,861 | 21,178,366 | 21,464,474.05 | 24,030,333 |
| British | 1915 | 465 | 1,630,833 | 1,847,341.10 | 2,200,514 |
| | 1916 | 358 | 1,161,097 | 1,140,395.07 | 1,570,660 |
| | 1917 | 780 | 2,663,250 | 2,595,158.60 | 3,393,750 |
| | 1918 | 702 | 2,529,203 | 2,498,596.49 | 2,615,675 |
| | 1919 | 607 | 1,915,744 | 1,954,715.87 | 1,876,939 |
| | 1920 | 753 | 2,760,188 | 2,805,018.50 | 2,830,268 |
| | 1921 | 972 | 3,978,329 | 3,989,281.58 | 3,738,257 |
| | 1922 | 935 | 3,795,526 | 3,728,007.80 | 3,329,861 |
| Totals | ........ | 5,572 | 20,434,170 | 20,558,515.01 | 21,555,924 |
| Norwegian | 1915 | 42 | 130,776 | 141,066.91 | 166,522 |
| | 1916 | 44 | 172,459 | 149,357.56 | 229,368 |
| | 1917 | 145 | 490,534 | 448,948.53 | 597,581 |
| | 1918 | 296 | 876,024 | 823,748.57 | 1,090,823 |
| | 1919 | 128 | 497,555 | 460,057.68 | 577,679 |
| | 1920 | 106 | 397,632 | 371,408.79 | 404,323 |
| | 1921 | 140 | 548,227 | 523,311.94 | 637,887 |
| | 1922 | 113 | 385,007 | 374,870.62 | 408,268 |
| Totals | ........ | 1,014 | 3,498,214 | 3,292,770.60 | 4,112,451 |
| Japanese | 1915 | [illegible] | 24,897 | 30,260.40 | 42,600 |
| | 1916 | 24 | 81,818 | 88,229.68 | 117,780 |
| | 1917 | 72 | 291,500 | 305,702.63 | 446,358 |
| | 1918 | 54 | 238,814 | 248,063.30 | 407,399 |
| | 1919 | 87 | 341,064 | 364,622.57 | 503,427 |
| | 1920 | 118 | 515,243 | 543,936.93 | 726,338 |
| | 1921 | 136 | 613,245 | 655,176.51 | 758,617 |
| | 1922 | 189 | 872,466 | 953,949.00 | 1,044,515 |
| Totals | ........ | 686 | 2,979,047 | 3,189,941.02 | 4,047,034 |
| Chilean | 1915 | 35 | 94,638 | 101,275.95 | 50,879 |
| | 1916 | 33 | 91,243 | 80,192.25 | 53,573 |
| | 1917 | 99 | 265,210 | 236,588.20 | 184,446 |
| | 1918 | 96 | 254,841 | 223,146.30 | 153,259 |
| | 1919 | 93 | 253,561 | 212,511.90 | 161,340 |
| | 1920 | 79 | 212,000 | 169,472.55 | 104,738 |
| | 1921 | 63 | 159,727 | 147,023.75 | 61,737 |
| | 1922 | 53 | 150,398 | 115,757.90 | 46,182 |
| Totals | ........ | 551 | 1,481,618 | 1,285,968.80 | 816,154 |
| Danish | 1915 | 24 | 92,537 | $110,680.30 | 116,603 |
| | 1916 | 18 | 68,011 | 66,938.80 | 94,950 |
| | 1917 | 43 | 163,882 | 141,461.44 | 242,567 |
| | 1918 | 100 | 272,946 | 249,761.14 | 420,063 |
| | 1919 | 79 | 213,534 | 207,404.47 | 325,277 |
| | 1920 | 9 | 32,221 | 43,528.35 | 42,533 |
| | 1921 | 60 | 236,512 | 241,411.86 | 322,059 |
| | 1922 | 53 | 227,473 | 222,146.65 | 272,779 |
| Totals | ........ | 386 | 1,307,116 | 1,283,333.01 | 1,836,831 |
| Dutch | 1915 | 7 | 21,075 | 24,103.58 | 26,402 |
| | 1916 | 15 | 39,642 | 43,910.44 | 61,959 |
| | 1917 | 74 | 260,500 | 270,321.78 | 314,203 |
| | 1918 | 48 | 197,627 | 214,211.46 | 233,063 |
| | 1919 | 19 | 88,299 | 97,467.75 | 119,297 |
| | 1920 | 29 | 152,536 | 126,868.98 | 128,442 |
| | 1921 | 59 | 248,801 | 229,248.94 | 216,488 |
| | 1922 | 56 | 293,428 | 260,138.38 | 290,573 |
| Totals | ........ | 308 | 1,301,907 | 1,266,271.31 | 1,390,427 |
| Peruvian | 1915 | 4 | 9,403 | 10,034.30 | 8,202 |
| | 1916 | 30 | 74,429 | 67,691.30 | 62,210 |
| | 1917 | 86 | 218,593 | 199,860.25 | 159,609 |
| | 1918 | 83 | 208,958 | 177,732.30 | 143,344 |
| | 1919 | 64 | 166,956 | 133,243.12 | 121,524 |
| | 1920 | 75 | 191,689 | 161,964.75 | 119,418 |
| | 1921 | 60 | 157,495 | 107,160.64 | 105,322 |
| | 1922 | 60 | 161,930 | 103,035.30 | 64,370 |
| Totals | ...... | 462 | 1,189,453 | 960,721.96 | 783,999 |
| French | 1915 | 3 | 10,703 | 12,843.60 | 13,600 |
| | 1916 | 1 | 4,343 | 4,782.50 | 7,176 |
| | 1917 | 9 | 38,889 | 39,446.42 | 36,680 |
| | 1918 | 52 | 147,805 | 152,028.03 | 159,859 |
| | 1919 | 104 | 253,774 | 283,971.06 | 286,812 |
| | 1920 | 60 | 114,664 | 127,818.17 | 125,249 |
| | 1921 | 44 | 155,889 | 164,575.94 | 132,836 |
| | 1922 | 51 | 190,171 | 216,475.40 | 139,463 |
| Totals | ... | 324 | 916,238 | 1,001,941.12 | 901,675 |
| Swedish | 1915 | 17 | 50,824 | 58,174.76 | 53,292 |
| | 1916 | 13 | 41,537 | 35,892.70 | 47,236 |
| | 1917 | 18 | 69,202 | 56,793.78 | 94,515 |
| | 1918 | 26 | 80,191 | 74,621.25 | 132,521 |
| | 1919 | 27 | 95,684 | 88,572.73 | 143,516 |
| | 1920 | 19 | 76,825 | 62,268.74 | 74,244 |
| | 1921 | 25 | 113,661 | 93,331.25 | 128,919 |
| | 1922 | 35 | 124,446 | 105,939.90 | 141.448 |
| Totals | ........ | 180 | 652,370 | 575,595.11 | 815,691 |
| Spanish | 1915 | ........ | ........ | ........ | ........ |
| | 1916 | ........ | ........ | ........ | ........ |
| | 1917 | 20 | 49,124 | 47,731.15 | 71,080 |
| | 1918 | 11 | 24,469 | 24,038.78 | 35,394 |
| | 1919 | 5 | 11,066 | 11,092.29 | 10,047 |
| | 1920 | 41 | 106,056 | 98,228.02 | 101,563 |
| | 1921 | 44 | 117,400 | 118,548.41 | 143,076 |
| | 1922 | 9 | 27,264 | 32,712.88 | 23,701 |
| Totals | ........ | 130 | 335,379 | 332,345.53 | 384,861 |
| Italian | 1915 | 2 | 4,158 | 3,992.40 | [illegible] |
| | 1916 | 1 | 3,861 | 2,779.92 | ........ |
| | 1917 | 2 | 6,430 | 6,029.80 | 5,700 |
| | 1918 | 4 | 13,218 | 16,875.70 | 11,450 |
| | 1919 | ........ | ........ | ........ | ........ |
| | 1920 | 26 | 98,692 | 98,959.79 | 63,441 |
| | 1921 | 25 | 102,783 | 103,206.60 | 47,988 |
| | 1922 | 20 | 73,393 | 75,511.30 | 38,851 |
| Totals | ........ | 80 | 302,535 | 307,355.51 | 168,330 |
| Miscellaneous | 1915 | 11 | 22,583 | 24,931.12 | 21,036 |
| | 1916 | 8 | 4,733 | 3,700.39 | 345 |
| | 1917 | 51 | 41,951 | 41,097.84 | 36,349 |
| | 1918 | 30 | 25,937 | 22,208.60 | 30,904 |
| | 1919 | 27 | 30,411 | 31,907.67 | 31,877 |
| | 1920 | 34 | 97,211 | 98,534.81 | 106,802 |
| | 1921 | 63 | 122,046 | 120,035.14 | 143,003 |
| | 1922 | 57 | 144,448 | 141,791.47 | 134,380 |
| Totals | ........ | 281 | 489,320 | 484,207.04 | 504,696 |
| Totals | 1915 | 1,075 | 3,792,572 | $4,367,550.19 | 4,888,454 |
| | 1916 | 758 | 2,396,162 | 2,408,089.62 | 3,094,114 |
| | 1917 | 1,803 | 5,798,557 | 5,627,463.05 | 7,058,563 |
| | 1918 | 2,069 | 6,574,073 | 6,438,853.15 | 7,532,031 |
| | 1919 | 2,024 | 6,124,990 | 6,172,828.59 | 6,916,621 |
| | 1920 | 2,478 | 8,546,044 | 8,513,933.15 | 9,374,499 |
| | 1921 | 2,892 | 11,415,876 | 11,276,889.91 | 11,599,214 |
| | 1922 | 2,736 | 11,417,459 | 11,197,832.41 | 10,884,910 |
| Grand totals | ........ | 15,835 | 56,065,733 | 56,003,440.07 | 61,348,406 |

# DELIVERY OF THE KAMOI

## First Electrically-Propelled Naval Vessel, Aside from Those of United States, Built for Japan by New York Shipbuilding Corporation

THE fuel ship Kamoi, built by the New York Shipbuilding Corporation for the Japanese Navy, completed her builder's trials off the Delaware Capes September 8. She is the first electrically propelled vessel to be acquired by any navy other than that of the United States. For thirty-six hours the Kamoi, manned by a crew of the New York Shipbuilding Corporation and a Japanese crew under command of Captain T. Murase, who will take her over, was put through tests that brought into play every possible stress on all parts of her machinery and equipment and showed no signs of weakness.

The Kamoi is a vessel of 13,000 tons deadweight, 8000 horsepower, a draft of 28 feet and a speed of about 15 knots. She will carry both coal and oil.

The electric drive equipment of the Kamoi, designed and installed by the General Electric Company, includes the use of synchronous motors for the first time in any twin-screw vessel. Tests demonstrated that the Japanese ship is the most economically operated steam vessel of her size afloat. Her electrical propulsion machinery gives unusual flexibility of control as well as economy of operation, and the mechanical simplicity of the driving unit affords exceptional reliability.

The Kamoi. Photo by New York Shipbuilding Corporation

There is practically no vibration in the vessel, as was shown by the balancing of a nickel on edge on the foundation of the main turbine while the ship was under way. While the ship was going ahead at full speed the propelling machinery was reversed to quarter speed astern in 19 seconds, after which the engines were brought up to full speed astern.

The Kamoi was built in this country instead of the large shipbuilding yards of Japan in order that the Japanese might get electric drive, which has been so highly developed in the United States on commercial and naval vessels.

### 8000 H. P. Curtis Turbine Generator

The main propulsion unit consists of an 8000-horsepower Curtis turbine generator, supplying power to two 4000-horsepower synchronous motors directly driving the twin-screw propellers. There are also two 400-kilowatt direct-current turbine generators, which supply the excitation current as well as power to operate such auxiliaries as the main circulation pump, main condensate pump, sanitary pump, blower motors, steering gear, radio apparatus, ventilators and lighting equipment.

There is also a 625-kilowatt auxiliary alternator, which can be connected to either of the auxiliary turbines in case of the failure of the main driving unit or any of the auxiliaries. This small generator will supply sufficient power to propel the ship at a speed of about seven knots.

The vessel is a coal burner, equipped with four Yarrow type boilers having oil spray boosters attached to be used when high temperature is desired quickly.

### The Radio Equipment

The radio equipment is also of General Electric manufacture, consisting of a 1-kilowatt telephone and telegraph transmitter and two complete receiving sets. An unusual feature of the telephone installation is five extensions from the radio room connecting with the captain's cabin, engine room and other parts of the ship. By means of this equipment the captain can remove the receiver from the telephone at any one of five stations and put in a call for the officer of another ship and carry on a conversation by radio much as he might from an office on a land telephone.

The Kamoi is Sperry equipped, having a Sperry gyroscopic compass, Sperry 30-inch, high-powered marine type searchlight, Sperry electric log, a Sperry course and speed recorder, which is controlled by the gyroscopic compass and by the electric log and gives a graphic record of the course and speed of the ship at all times.

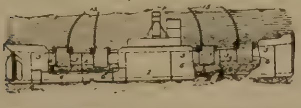
The ship has a normal displacement tonnage of 19,500, is 495 feet long and has a beam of 62 feet. She has a draught of 28 feet and a deadweight of 13,000 tons. She is equipped to carry approximately 10,000 tons of fuel oil.

Dock trials, held at Camden August 25, proved satisfactory. After informal receptions on board the ship at Philadelphia and New York the Kamoi coaled at Norfolk for her voyage to Japan.

# SOME MARINE PATENTS OF THE MONTH

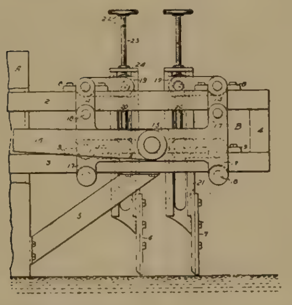
1,428,538. METHOD OF AND APPARATUS FOR RAISING SUBMERGED VESSELS. **Frederick W. Ebeling**, New York, N. Y., assignor to Submarine Devices Corporation, a Corporation of Delaware. Filed Nov. 12, 1920. Serial No. 423,576. 10 Claims. (Cl. 114—50.)

1. The method of raising submerged vessels, which consists in forcing air under pressure into a hold to expel the water, maintaining permanently within the hold a column of water to trap the introduced air in sufficient volume to give the necessary buoyancy to the vessel to cause it to rise, and allowing the trapped air to escape through said column of water in accordance with the reduction in hydrostatic pressure resulting from the rise of the vessel.

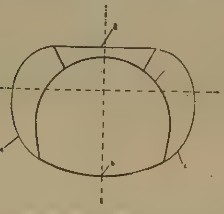


1,428,873. PADDLE PROPELLER. **Benjamin F. Baddeley**, San Francisco, Calif., assignor of forty-nine per cent to J. Charles King, San Francisco, Calif. Filed Jan. 2, 1920. Serial No. 348,822. 6 Claims. (Cl. 115—66.)

1. A paddle propeller comprising a frame, two pair of superposed cranks journalled in the frame, each of said cranks comprising a pair of widely separated crank webs connected by a long crank pin, a pair of interspaced vertically disposed arms connecting the crank pins and journalled thereon, a paddle blade secured to the lower ends of the arms and connecting the arms, and a common connecting member for each end of the cranks to insure unitary movement of the cranks, said connecting member comprising a straight bar with a T-shaped head formed on each end thereof and a connecting rod attached to the center portion of said member.

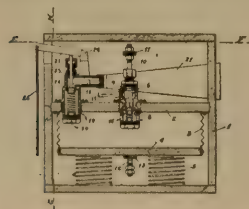


1,428,218. HULL CONSTRUCTION FOR SUBMARINE AND LIKE VESSELS. **Ferruccio Cossutta**, Trieste, Italy. Filed Jan. 10, 1921. Serial No. 436,348. 2 Claims. (Cl. 114—16.) (Granted under the provisions of the act of Mar. 3, 1921, 41 Stat. L., 1313.)



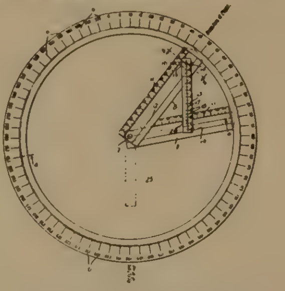
1. A hull construction for submarine and like vessels in which a transverse section of that part of the hull which resists the external pressure consist of two elastic arcs of different radii of curvature both concave towards the interior, and intersecting each other at two points substantially at the level of the bilge, the arc of greater radius forming the bottom and the arc of less radius the top and sides, of said section.

1,428,587. FOGHORN FOR MOTOR CRAFTS. **Ole Hakonsen**, Skudenes, Norway. Filed Aug. 27, 1921. Serial No. 495,900. 9 Claims. (Cl. 116—58.)



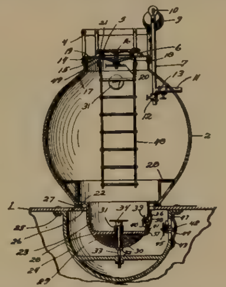
8. A signaling device comprising a flexible air reservoir, said reservoir being connected to a source of compressed air, a valve for controlling the passage of air from said source to said reservoir, said valve having a valve stem, means normally holding said stem in position to maintain said valve open to permit passage of air to said reservoir, a connection between said reservoir and said stem whereby said reservoir when full actuates said stem against the action of said means to close said valve, a horn connected to said reservoir and adapted to be operated by compressed air, a second valve, normally closed, interposed between said reservoir and said horn, and means for causing said reservoir to collapse to discharge the air contained therein through said horn when said second valve is opened, the collapse of said reservoir permitting said first-named means to open said first valve and permit the supply of air from said source to refill said reservoir.

1,428,449. NAVIGATING INSTRUMENT. **Bryan W. Prall**, West New Brighton, N. Y. Filed Mar. 16, 1921. Serial No. 452,038. 7 Claims. (Cl. 33—75.)



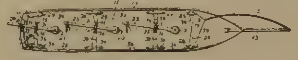
1. An instrument of the character described, comprising a circular base plate, an upstanding peripheral flange around the base plate, a pair of radial indicating arms pivoted at the center of the base plate, a third indicating arm carried by one of the first mentioned arms, and means extending inwardly from said flange receiving and guiding the free ends of the first mentioned arms.

1,428,012. LIFE-SAVING DEVICE FOR SUBMARINES. **Jacob De Stefano**, Kansas City, Mo., assignor of one-half to Pete Rappas, Kansas City, Mo. Filed Apr. 4, 1921. Serial No. 458,235. 1 Claim. (Cl. 114—16.7.)



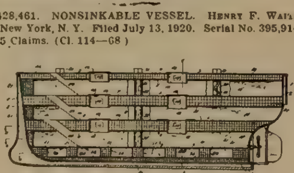
The combination with a vessel, of a buoyant device detachably secured to said vessel, a vent in the upper part of the device, a valve controlling said vent and operable from within said device, and a valve-controlled drain tube extending from said vent above the valve thereof to the exterior of said buoyant device.

1,429,156. SAILBOAT. **Charalabos Moraitis**, Galveston, Tex. Filed June 13, 1921. Serial No. 477,178. 1 Claim. (Cl. 114—102.)



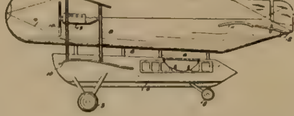
In a sailing vessel including a jib sail and masts carrying booms and mainsails, of a plurality of guide sheaves, attached to the vessel along its opposite sides and spaced to correspond to the mainsails, a guide sheave attached to each of said booms, cables attached at one end to said jib sail, means for guiding said cables from the jib sail respectively to the foremost guide sheaves of the vessel at opposite sides thereof, said cables being thence carried alternately around the sheaves of the vessel and the sheaves of the booms, whereby the shifting of the mainsails will correspondingly shift the jib sail.

1,428,461. NONSINKABLE VESSEL. **Henry F. Waitz**, New York, N. Y. Filed July 13, 1920. Serial No. 395,914. 5 Claims. (Cl. 114—68.)



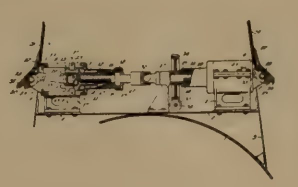
1. A vessel comprising a hull, a protective shell, and means spacing said hull and shell, said vessel having a plurality of double-walled buoyant unit containing decks, a plurality of double-walled buoyant unit containing compartments between decks, and said decks having hatchways leading therethrough which are provided with lateral doors and doorways for passage of said units.

1,427,998. AIRSHIP. **Thomas Barrett**, Pasadena, Calif., assignor of one-twentieth to Walter M. Murphy, Pasadena, Calif. Filed Apr. 7, 1920. Serial No. 372,001. 1 Claim. (Cl. 244—5.)



An airship comprising a gas bag having the capacity of rendering the loaded organization buoyant in air, guiding mecahnism carried by said gas bag, a gondola depending from said bag and adapted to float the loaded organization in water, an airplane structure mounted upon said gas bag and gondola said structure having propelling mecahnism, and landing wheels carried by said gondola.

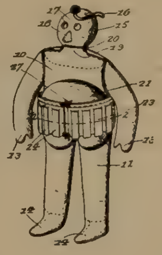
1,428,335. HYDROPLANE-OPERATING MECHANISM FOR SUBMARINE BOATS. **Johannes F. W. Kolvig**, Bridgeport, Conn., assignor to The Lake Torpedo Boat Company, Bridgeport, Conn., a Corporation of Maine. Filed Jan. 12, 1922. Serial No. 528,691. 25 Claims. (Cl. 114—16.)



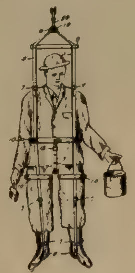
1. In a submarine boat, folding and tilting hydroplanes, and operating mechanism therefor, including a main member mounted to receive a reciprocating movement when extending or folding the hydroplanes, and a combined longitudinal and rotary movement when reaching the limit of its outward travel.

1,424,174. LIFE-SAVING SUIT. **James F. Mordica**, Philadelphia, Pa. Filed Apr. 8, 1921. Serial No. 439,553. 2 Claims. (Cl. 9—20.)

1. A life-saving suit comprising a one-piece body and nether garment having a tubular extension on the upper end through which the wearer enters the suit, said tubular extension having a puckering string in its upper end to close the extension over the head of the wearer to form a mask, said extension having eye and nose elements and means on the body portion of the garment interchangeable across the shoulders of the garment for drawing the lower portion of the tubular extension closely around the neck of the wearer.

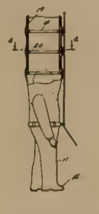


1,428,369. BOATSWAIN'S SEAT. **Pasquale Giannone**, Philadelphia, Pa. Filed Oct. 2, 1920. Serial No. 414,194. 3 Claims. (Cl. 227—8.)

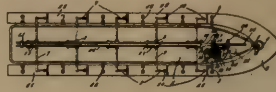


1,425,471. APPARATUS FOR SUBMARINE WORK. **Arthur B. Hansen**, New York, N. Y. Filed Apr. 14, 1920. Serial No. 373,752. 1 Claim. (Cl. 61—68.)

An apparatus for submarine work including a waterproof suit having an open upper end and a continuous flexible and collapsible tubular extension communicating with said upper end, spaced annular braces secured within said extension that maintain the same distended when submerged, a flexible connection between the upper and lowermost braces constituting a means for limiting the relative separation of said upper and lowermost braces whereby the weight of the suit and diver is supported by the flexible connection, the intermediate braces having eyes through which said connection is trained to prevent relative twisting of the braces and the extension, a belt secured around the intermediate portion of the suit, and a forwardly presented eye carried by the belt adapted to receive the intermediate portion of an adjustable hauling line.



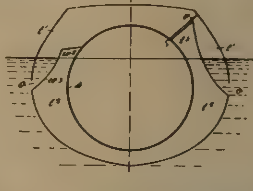
1,424,811. HYDROPLANE. **Robert P. Erhard**, Juniata, Pa. Filed Dec. 1, 1920. Serial No. 427,567. 5 Claims. (Cl. 114—66.5.)



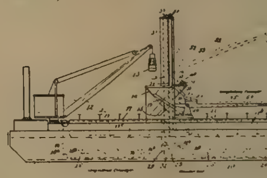
1. The combination with the hull of a hydroplane and tiltable planes at the sides thereof, of motor propelled means for tilting the planes at one side of the hull oppositely to the planes at the other side of the hull, and motor propelled means for shifting all of the planes simultaneously upwardly and downwardly at their front ends.

1,427,526. MARINE VESSEL. **Hermann Gustav Carl Frahm**, Brahmsallee, Hamburg, Germany. Filed June 23, 1920. Serial No. 391,240. 2 Claims. (Cl. 114—125.)

1. A submarine comprising an inner air-tight shell, an outer shell spaced therefrom and having apertures therein below the water line and partitions disposed symmetrically on each side of the longitudinal axis of the submarine between said shells, each partition extending inwardly from a point just below the apertures in the outer shell in a substantially continuous curve to a point above the water line and thereafter turning abruptly inwardly against the inner shell in such a manner that a pocket like water chamber is formed between said partition and outer shell, said chamber being spaced from said inner shell.

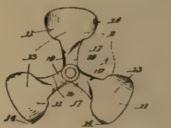


1,427,091. FUELING BARGE. **Arthur F. Case**, Cleveland, Ohio, assignor to The Wellman-Seaver-Morgan Company, Cleveland, Ohio, a Corporation of Ohio. Filed May 26, 1919. Serial No. 299,832. 12 Claims. (Cl. 214—12.)



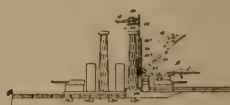
1. A fueling barge having a series of storage hoppers, a conveyor having a portion extending over the hoppers so that it may deliver fuel thereto, and having a portion extending beneath the hoppers so that it may carry fuel therefrom, means for supplying the fuel to the upper part of said conveyor so that it may be delivered to the hoppers, and means for receiving the fuel from the lower part of said conveyor and delivering the same to a boat to be fueled comprising a cross conveyor to which the fuel is delivered by the first-named conveyor, and an elevator for receiving the fuel from the cross conveyor.

1,427,307. PROPELLER. **Roy C. MaKenney**, St. John, New Brunswick, Canada. Filed Nov. 25, 1918. Serial No. 264,050. 1 Claim. (Cl. 173—159.)



A propeller blade comprising an inner and outer part, the inner part being set with a helical twist at 25 to 30 per cent less pitch than the outer part pitch basis, the driving side of the outer part being flat and at right angles to the axis of the hub of the propeller, thereby causing the pitch to expand as it nears the top of the blade, and the front face of the blade being convex and tapering off to a sharp cutting edge.

1,428,163. LAUNCHING AND LANDING OF AEROPLANES. **James B. Harriss**, Newark, N. J. Filed June 23, 1917. Serial No. 176,476. 26 Claims. (Cl. 244—2.)



1. In apparatus for launching aeroplanes or the like of the pontoon type from predetermined stations, a plane runway including a pair of substantially parallel track members; each member comprising a pair of track elements, and rotatable members carried by the pontoon structure and movable with the plane, each rotatable member co-operating with a pair of track elements throughout the length of the latter in the direction of plane launching movement to control the direction of plane movement while being launched.

—From Official Gazette, United States Patent Office

# THE AMERICAN SHIP BUILDING CO.'S REPORT

DURING the fiscal year 1921-1922, the American Ship Building Company had a gross income of $1,369,757.63 after the deduction of manufacturing expenses, according to the twenty-third annual report. From this gross income deductions made are as follows: administrative and general expense, $480,491.30; depreciation, $466,257.64; state, county and miscellaneous taxes, $226,582.57; maintenance and repairs, $125,342.53, a total of $1,298,674.04, leaving a net profit from operations of $71,083.59. To this is to be added other income as follows: enhancement in value of Liberty bonds, $667,678.74; profit on Liberty bonds sold (based on book and market values at beginning of year), $292,817.50; interest earned, $553,601.99, a total of $1,514,098.23. The carrying cost of Type Eleven ships was $69,438.02; sundry profit and loss items, net, were $5297.52, and provision for estimated Federal taxes, $20,000, an aggregate of $94,735.54, which, deducted from other income, leaves $1,419,362.69. Net operating profit brings the total net addition to surplus before providing for dividends to $1,490,446.28. The surplus as of June 30, 1921, was $11,363,319.94.

### Preferred Stock Exchanged

Preferred dividends of $428,498 (at the rate of 7 per cent) were declared in 1¾ per cent installments, three of $138,250 and the fourth of $13,748. (See last paragraph of Mr. Farr's report below.) Dividends of 4 per cent, 4 per cent and 21¾ per cent were declared on $7,600,000 of common stock and one of 10 per cent and five of 2 per cent on $14,714,400 of common stock outstanding subsequent to exchange by stockholders of preferred for common. Total dividends on common were $5,203,880, and the surplus as of June 30, 1922, was $7,221,388.22.

The report of M. E. Farr, president, follows:

**To the Stockholders:**

The company has been without new construction work during the past fiscal year, and, in consequence, operating earnings were derived solely from dockages, reconditioning, replacements, and repairs to Lake vessels. This class of work amounted to about 60 per cent of 1921, which made the net earnings from operation necessarily small. Many Lake vessels were out of commission during the entire navigable season of 1921, and few were fitted out at the opening of navigation in 1922. The revenue received from investments and other sources shows a marked increase over the year 1921.

### New Business in Prospect

During the months of May and June of 1922, the company closed contracts for four bulk freight steamers for Great Lakes service, having a total deadweight capacity of 48,750 gross tons. Negotiations for new business are under way, with favorable prospects for obtaining other important orders.

There were 221 vessels, aggregating 621,909 tons, drydocked at the various plants of the company during the year. Repair plants located at Lake Erie ports were operated at full capacity during the winter and spring of 1921-22. All repair work with the exception of extensive repairs to two large steamers, was completed with exceptional dispatch. The repairs to these two steamers, delayed by striking workmen, were completed in ample time for use by their owner.

All of the Type Eleven ocean ships are still out of commission and in first-class condition. The ships are well designed, strongly constructed, and fully equipped for economic operation. The low prices quoted for other but inferior tonnage have prevented the sale of these ships, even at prices greatly below the present cost of reproduction.

### $200,000 for Cleveland Plant

An appropriation amounting to $201,500, covering the cost of rearranging the Cleveland Plant by replacing the present punch shed, joiner shop and pipe shop with modern fireproof steel structures, putting in new building berth foundations, and installing equipment necessary to construct the largest size Lake type ship, was made. These improvements will be postponed until needed for new construction work. Miscellaneous appropriations amounting to $700 were made. The expenditures for account of appropriations made prior to June 30, 1921, amounted to $15,903.37.

Sales of regular plant equipment not needed amounted to $14,840.26. A new lease of the property known as Old Globe Foundry and Pattern Shop was entered into for a period of ninety-nine years, at an annual rental of $4000, the lessee assuming all taxes, assessments and other charges against the property. The lessee has the privilege of buying the property at any time within ten years from date of lease, by paying $80,000 in cash therefor.

It will be necessary in the near future to rebuild one wharf at the Lorain Plant, and make general repairs to a number of the wooden drydocks; otherwise the property of the company in use is in good condition. The property of the company is not encumbered. The fire loss during the year amounted to $2063.98, which, on account of the nature of the damage, was settled for $1600. The indebtedness shown in the balance sheet is current, and there are no known contingent liabilities.

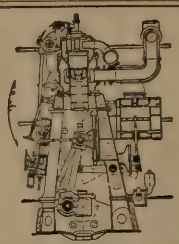
### Some Preferred Outstanding

Inventories, with the exception of broken lots, obsolete and surplus materials left over from the war construction program, have been taken on a basis of cost at the time of purchase, but not in excess of the prevailing market price at the close of the fiscal year. The amount received during the year from sale of surplus war material was about 31 per cent of sales for the preceding year.

The premium set aside during the year to cover workmen's compensation and public liability risks amounted to $45,722.82, and the disbursements, actual and estimated, aggregated $91,061.37. The unusually high percentage of fatal and severe injury cases accounts for the year's loss in carrying this risk.

The efforts of your president to carry through a plan for retiring the company's outstanding preferred stock with cash or equivalent, were without success. The holders of the common stock were unwilling to turn over the greater part of their interests in the accumulated surplus, to which they were legally entitled, for the purpose of retiring preferred stock. A compromise plan was effected which resulted in the exchange of over 90 per cent of preferred for common shares. The exchange plan received the unanimous support of the officers and directors of the company.

## Oil Engines and Motorships



# A DIESEL ENGINE SHOP

## Atlas Imperial Company Builds Four-Cycle, Full-Diesel Type; High Pressure Air Compressor Feature is Eliminated

SINCE the first appearance of the diesel engine in 1897 it has been the aim and ambition of the foremost engineers to produce an engine of the diesel type that would have less intricate mechanical features, such as extremely high fuel injection air pressure—one that could be used as a universal power plant for all purposes under all conditions.

Engine-builders all over the world have been exceptionally successful in the past with large units. Realizing the big demand for an economical engine simple of operation and of the smaller type, the Atlas Imperial Gas Engine Company of Oakland, California, went to work with a view to producing smaller size diesel engines and to eliminating the dangerous high pressure air feature. The company has had about thirty years' experience in designing and building heavy duty type internal combustion engines and six years' experience in building diesel engines of the air injection type. The result of considerable expense and time in experimenting is its new product, the Atlas Imperial mechanical injection full diesel engine.

### Four-cycle Principle

The engine is of the full diesel type and of the four-cycle principle. The fuel is injected into the cylinder at the proper time for ignition, entering the cylinder in the form of a fine spray, thus eliminating the high pressure air compressor used for fuel injection. The ignition is accomplished by the heat of compression only, which is 350 pounds a square inch. No priming or pre-heating is required for starting. The engine starts with a maximum air pressure of 160 pounds in 20 seconds from cold to full load with 14 to 24 gravity crude oil. The lubricating is done by forced feed through the hollow crankshaft and hollow connecting rods by means of an oil pressure pump.

Atlas diesel engines, for marine and stationary work, are built in the vertical form and multiple cylinder units up to six cylinders and range from 55 to 350 horsepower. The distribution of metal has been planned carefully to secure the desired strength without adding superfluous weight at any point. The approximate weight of the engine is from 150 to 170 pounds a rated horsepower.

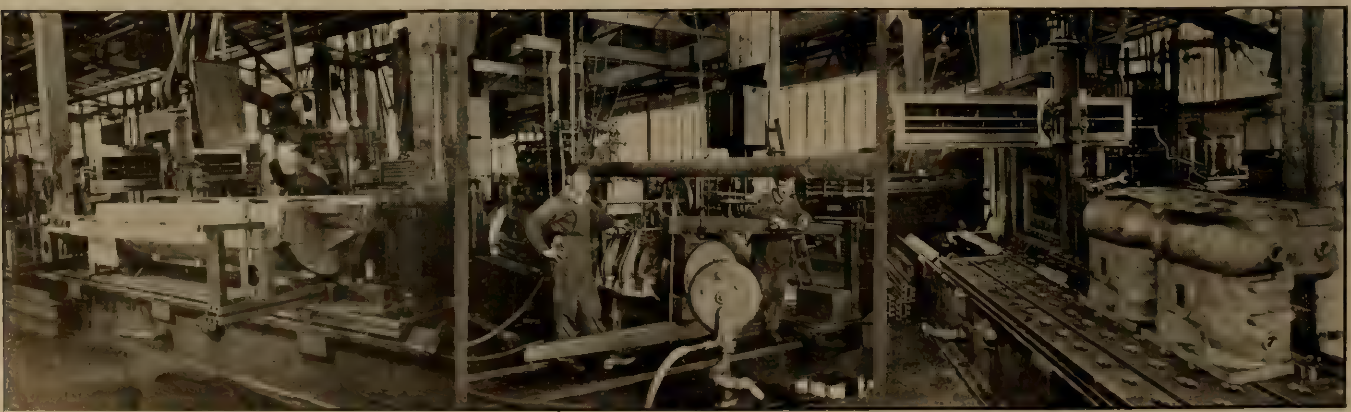
### The Crank Case

The crank case is a solid casting made of high quality close grained cast iron, reinforced by transverse and longitudinal ribs. The design and construction of the upper crank case permit accessibility to the shaft, bearings and connecting rods. Large round doors that open directly in front of the cranks permit of making adjustment of these parts when necessary. A crank casing for a marine type diesel engine is here seen on the table of a 4 by 4 by 13-foot Detrick & Harvey planer. The lining up and clamping of the work to the table is done in the usual way and is plainly seen in the photograph. The entire crank case is oil-tight, being machined and gasketed throughout.

All the main bearings are made in halves of cast iron, lined throughout with high-grade anti-friction metal. They are machined to gauges so as to be interchangeable, and hand scraped to a perfect fit on the finished shaft.

### Crankshaft of Open Hearth Steel

The crankshaft is made of solid open hearth forgings of high-grade steel. The forgings are made by the American Forge Company of San Francisco. The webs are cut out with the oxy-hydrogen torch and finished on a 36-inch by 18-foot Bradford lathe, made by the Bradford Machine Tool Company of Cincinnati, Ohio. The crankshaft for a four-cylinder engine, seen



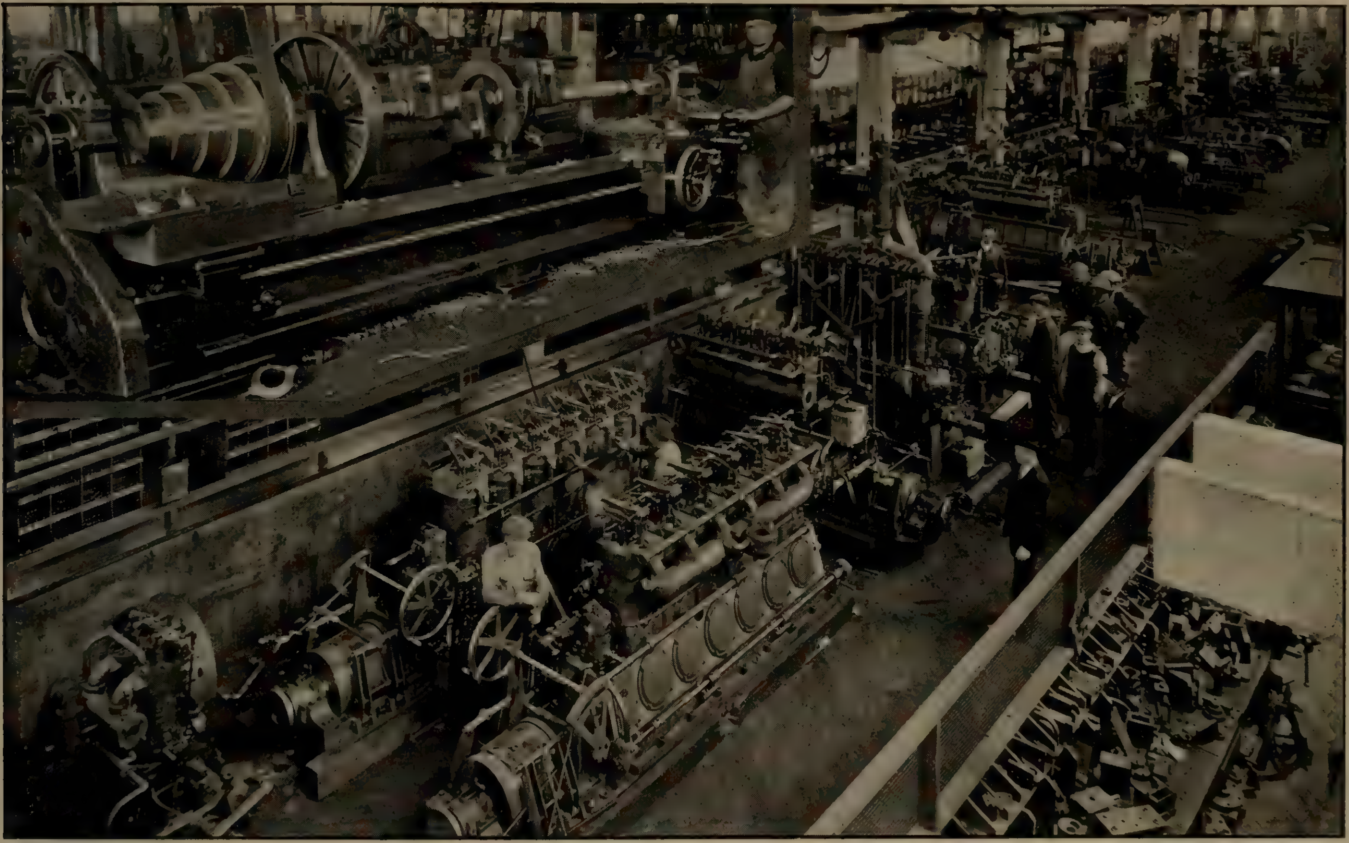
At left, planing a bed plate. Center, engine on test block. Right, planing cylinder frames on the lathe undergoing finish turning, has a length of 10 feet and is carefully balanced and turned to micrometer gauges. About 48 hours were required for the turning operation on this particular size shaft.

The camshaft is enclosed in the top of the crank case and is driven from the crankshaft by a wide face spur gear. The shaft is highly finished and all the cams hardened. The cylinder head is a separate casting. It contains all valve openings and rocker lugs necessary to the cycle and is thoroughly water-jacketed. The pistons, which are cast from a special close grained mixture, are of extra length and of the trunk type. The rough castings are accurately turned to size, with proper allowance for expansion. The ring grooves are carefully machined in the upper end of the piston to receive specially designed piston rings.

The reverse gear for the marine type engine is of the spur gear type. The gears are made from solid steel forgings accurately milled to size, and the steel pinions are bushed with plastic bronze bushings. The arrangement of the gearing is such as to drive the propeller ahead or reverse at equal speed.

All parts finished in the machine shop are sent to the erecting department, seen in the illustration, which shows twenty diesel engines under construction in various stages of completion. Here also the final fitting of the different parts is performed, and the engines completely assembled and tested before leaving the factory.

In connection with the shop the company has a well equipped tool room and a modern pattern shop with all the facilities for doing its own pattern work.



Erecting bay at the shop of the Atlas Imperial Gas Engine Company. Insert, upper left, shows the turning of a crankshaft on an engine lathe

# MOTORSHIPS SUPPLANTING STEAMSHIPS

IN spite of the severe shipping depression, motorship tonnage (full-powered ships 2000 gross tons or over) increased 37 per cent in the year ended June 30, 1922, as against a gain of only 4 per cent for steam tonnage exclusive of motorships, according to an analysis of shipping released by the transportation division of the Department of Commerce. On June 30, 1921, there were 145 motorships of 2000 gross tons or over, aggregating 692,000 gross tons; on the same date this year there were 186, totaling 946,000.

The United Kingdom continues to lead with 36,000 tons, an increase of 24 per cent. Sweden registered a large percentage gain, but continues in third place. Norway has displaced the United States as fourth on the list. Germany, which did not have enough motorship tonnage to appear separately in the list last year, has seven vessels aggregating 32,083 tons this year. Danzig has two ships of 12,078 tons; one of these is the Zoppot of 9932 tons, one of the largest tankers in the world.

The above totals are for what may be termed seagoing ships. In addition to these are 605 vessels under 2000 tons each, aggregating 234,325 tons equipped with diesel engines. Last year on the same date there were 553 vessels of this kind, totaling 216,110 tons.

The chief engineer of one of the largest British shipyards stated two years ago that he saw a promising future for sailing ships with auxiliary diesel engine power. This kind of tonnage has increased from 45 ships totaling 13,000 tons on June 30, 1915, to 777 of 342,530 tons in 1921, and to 870 of 353,181 tons in 1922. The United States holds the lead in this kind of tonnage, with 54 ships aggregating 50,957 tons.

# AN UNUSUAL SHIP'S GALLEY

## Norwegian Motorship Handicap Uses Electric Current for Stove, Boiler, Oven, etc., and Exhaust from Main Engine for Baking

IN Pacific Marine Review for October there appeared an article and illustrations describing the performance of the Norwegian motorship Handicap and showing views in her engine room. This vessel was built at Stavanger by Rosenberg Mekaniske Verksted for Messrs. Bruusgaard Kiosterud Dampskibs of Drammen.

In several respects the Handicap is unique. She is the largest vessel ever built in Norway, her dimensions being 415 feet in length B. P., 54 feet 6 inches beam, 36 feet 11 inches molded depth, 9000 tons' deadweight capacity.

She is the first commercial vessel fitted with separate turbo-blowers for scavenging air. The air for these blowers, which are located on the upper engine room platform under the shelter deck, may be taken from the engine room direct, thus giving a remarkable cooling effect, so that in the tropics with the temperature on deck 108 degrees Fahrenheit that at the engine room floor was 86 degrees Fahrenheit.

She had when built the highest power Sulzer 2-cycle diesel engines installed in a merchant vessel. These were two in number, giving 1350 shaft horsepower each from four cylinders and were supplied by Sulzer Brothers of Winterthur, Switzerland.

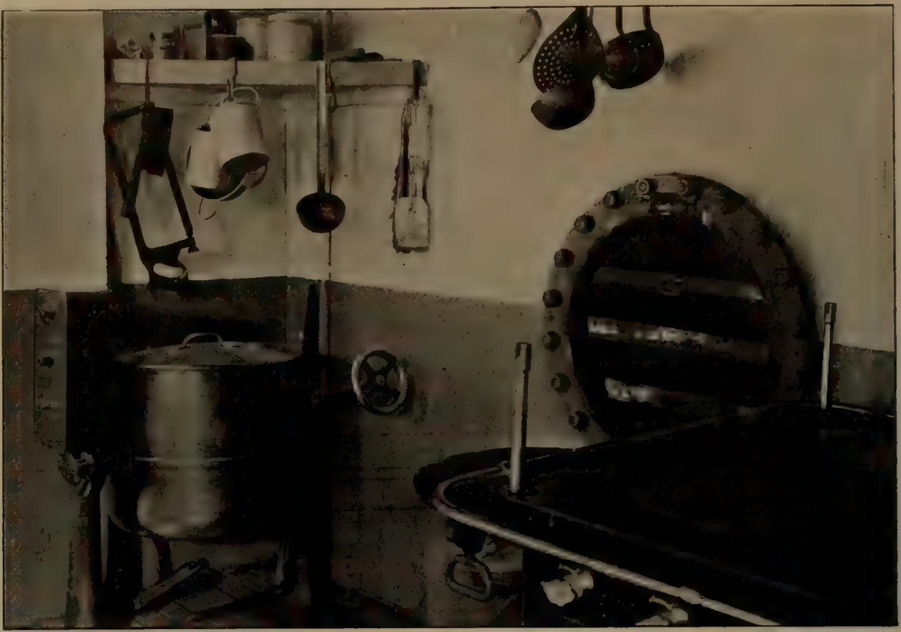
She uses no fuel outside the cylinders of the main and auxiliary diesel engines. Cooking, heating, lighting, all auxiliary pumps, steering, are all controlled and operated electrically.

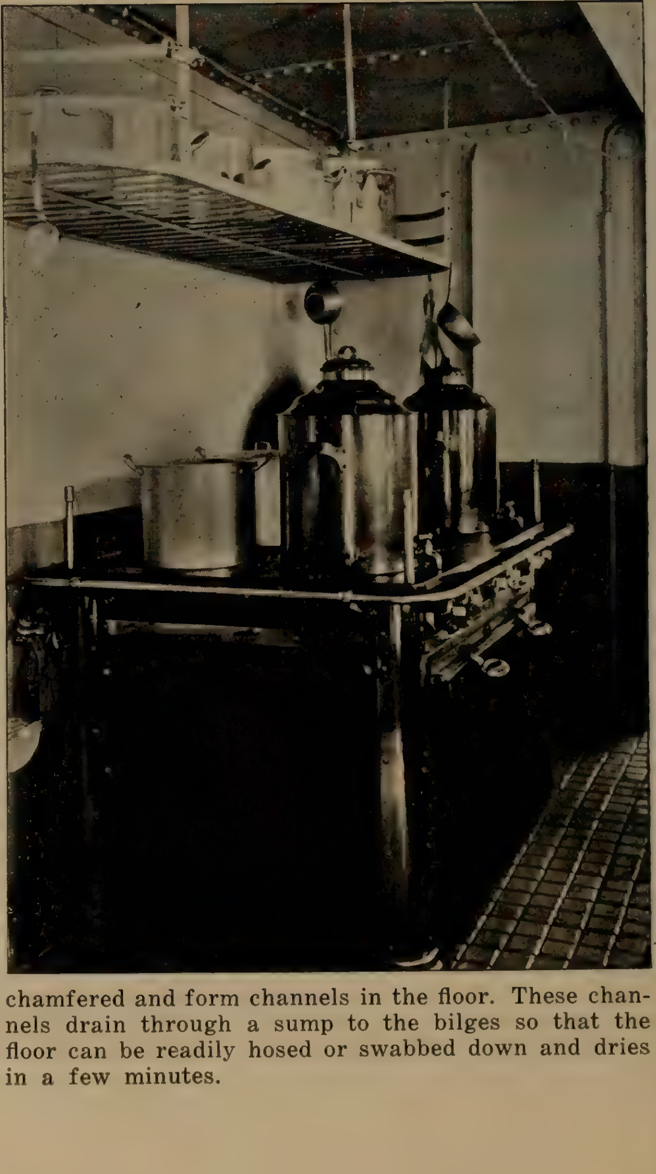
This universal use of electricity has been found very satisfactory, particularly in the galley, where the ship's cook was very proud to exhibit his work shop. As will be seen from the illustrations, from the tiled floor to the enameled ceiling, stoves, utensils, tools, and walls are spotless.

Two ovens built into the bulkhead are heated by the exhaust gases from the main engines. At sea these ovens are maintained at a baking heat of from 300 to 500 degrees Fahrenheit and have ample capacity to bake all the cake, bread, pies and puddings consumed by the crew of 35 with no cost for fuel or electrical energy.

The electrical equipment was all supplied and installed by the Norsk Electric and Brown Boveri Company of Stavanger, Norway. This equipment is quite simple and well adapted to its use. It consists of a six-plate electric range, with a large capacity oven; an electric double boiler hung on pivots, in its stand; a small electric oven; a pendulum balanced electric plate set in the cabinet of the cook's work bench. This balanced plate has been found particularly useful in frying at sea, because no matter how the ship rolls it keeps the frying pan square with the world.

The floor is set with square tiles of vitreous material set in cement. The edges of these tiles are chamfered and form channels in the floor. These channels drain through a sump to the bilges so that the floor can be readily hosed or swabbed down and dries in a few minutes.





Above is a corner of the Handicap's galley, showing electric boiler and large capacity oven heated by exhaust from main engine. Below is the motorship's electric stove.

# MARINE INSURANCE

CHARLES F. HOWELL, Eastern Contributing Editor
J. E. SHERBURNE, Western Contributing Editor

## On the Atlantic

### Hague Rules Revised

When the American representatives to the international conferences on the carriage of goods by sea met with experts of other maritime countries at London October 9 and at Brussels on the 16th they carried the final mature judgment of American marine underwriters on this subject in the concrete form of a draft for a bill of lading that expressed what would be most satisfactory to interests on this side. This draft was unanimously adopted by the American Institute of Marine Underwriters September 19, and represented a revision of The Hague Rules, 1921. It contained alterations and amendments as submitted to the institute by a special committee composed of Benjamin Rush, G. B. Ogden, S. D. McComb, H. E. Reed and W. D. Winter. The institute went on record that the amendments to The Hague Rules proposed by the Imperial Shipping Committee of Great Britain represented a substantial improvement to the rules as originally drawn and that those rules, as so amended, represent a desirable improvement upon existing law. Additional changes were, however, urged by the institute and incorporated in the draft finally handed to our representatives at the conference.

The language of the resolution on the subject, unanimously adopted by the institute, read as follows:

"Be it resolved, that the rules for carriage of goods by sea as amended and hereto attached be recommended for general international adoption and to the Congress of the United States for passage.

"We approve of the rules for carriage of goods by sea as recommended by the Imperial Shipping Committee in that they offer a substantial and desirable improvement upon the law as now existing, but we feel that the American representatives to the London Conference of October 9 and the Brussels Conference of October 16 should make every effort to secure the adoption of the further amendments to the rules which we hereby recommend.

"We think the rules should be extended to include cargo carried on deck. (Subject to special contracts.)

"The rules should apply to cargo from the time it is received into the custody of the carrier until its delivery to consignee. (Haight said every port had different laws.)

"When goods are delivered in a damaged condition, a notation of the damage on the receipts given by the consignee to the carrier should be sufficient notice of claim (Article 3, Section 6).

"The carrier should remain liable for fire if such fire is caused by the design or neglect of such carrier. This merely continues the law as it now exists in accordance with U. S. R. S. Section 8020. If the rules are enacted by the United States they might be construed as repealing such statute, unless the phraseology which we have suggested be added in Article 5, Section 2, Subdivision (B)."

Objection to the Hague Rules on the part of American underwriters lies in the following points: They are defective because they apply only to merchandise and/or cargo and/or property received on shipboard, and they fail to deal with the liability of the carrier for the aforesaid goods, merchandise and property from the time the goods are legally received by him until they are loaded on shipboard; because they fail to deal with the liability of the carrier after the goods are discharged from the ship, while they are still in his legal custody and before they are delivered to their owners; because they fail to cover live animals or goods carried on deck; because they specify that the carrier shall not be liable for loss resulting from fire, and make no differentiation between fire unavoidably occurring and fire resulting from the carriers' own negligence; because they limit the amount of their liability to not exceeding £100 a package, thus creating an unjust discrimination between owners and shippers and consignees of goods whose value is less than £100 a package and those persons whose goods exceed £100 in value; because under Article VI in the proposed rules the language is so vague that there is a possibility of the entire rules being entirely negatived by special agreement between the parties at interest; because under the proposed Article VII arrangement is made whereby the carrier may be relieved, by special agreement, from all liability for the loss and damage to or in connection with the custody, care and handling of the goods prior to loading on and subsequent to the delivery from the ship on which the goods are carried by sea. Also because the rules are not mandatory, and may or may not be adopted by carriers as they deem best for their own interest.

All of these objections were taken care of in the amended text.

### Business on the Lakes

Havoc was played with the shipping business on the Great Lakes by the strikes, coal shipments to September 4 being 11,000,000 tons short of the quantity carried during the same period of last year. Ore shipments are about 12,000,000 tons ahead of last year, by the figures of the close of September; but it must be remembered that last year was one of the poorest seasons for ore that the Great Lakes had known in a long time. Heavy movements of grain and coal are looked for during the remainder of the season, and it is anticipated that most of the lake tonnage will be actively engaged. The lakes have been peculiarly free from serious casualties thus far this year, and underwriters are hopeful that the winter season now at hand will continue the good record.

### Rate Schedules Change

About the middle of September is the time when various changes are made in rate schedules. It is customary with most underwriting offices to charge a differential in summer and winter rates on shipments to the Baltic. Such tariffs generally change with respect to sailings made on and after September 15 as vessels sailing after that date are likely to encounter ice conditions in the Baltic and also because they arrive during the period when the days are rapidly growing shorter, this fact requiring extended navigation in darkness.

Similarly many flour tariffs provide for an increase in Montreal rates September 15, although the general Montreal tariffs do not change until the middle of October. Ice and fog conditions have to be taken into consideration after October 15. On the lakes such tariffs provide for an increase in rate on

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sailings after October 1, while other tariffs do not change until November 1. The increased danger of storms on the lakes during the early fall months is responsible for this increase in tariffs. As competition for various classes of business increases a noticeable lengthening of sailing periods is observed in the tariffs. One of the common methods of granting reductions in rates in those services that involve a sliding scale of rates is to grant the minimum rate for a longer period than previously existed.

While rates for marine risks in certain trades advance during the winter, rates for leakage are apt to show some modification as most liquids will not leak to the same degree in winter as in summer. Most liquids thin with heat while others, notably cocoanut oil, thicken when subjected to a cold temperature. Thus some underwriters will insure imports of olive oil during winter months only or will provide a different percentage of average for the ordinary deductible leakage in winter as compared with summer shipments. Of course, the danger of shifting of cargo on the North Atlantic is much greater in winter than in summer, due to the heavy storms that prevail during the winter months, but it is felt that this peril is much less hazardous than that of seepage of oil due to thinning.

## War Risks to the Near East

Underwriters are naturally anxious over the political and martial troubles now so acute in Turkish waters, and they fear the possible extension of those difficulties. Many cargo offerings for Turkish and Greek ports have been cancelled. Inquiries have frequently been coming in to underwriting offices as to the possibility of using a route via Trieste with transshipment by rail at that port. The situation has been having a bad effect upon shipments to South Russia, and this is especially regrettable because of greatly improved conditions there as respects local government, etc. War risks for Turkish waters have been quoted at from 1 to 1½ per cent. Steamship men have been fearful lest the entire Suez Canal business be disturbed in consequence of the war operations.

Many banks have been refusing to accept policies covering war risks when such policies contain the frustration clause. The banks assert that one of the serious hazards arising out of the Near East disturbances is the possibility of this government refusing to permit vessels to sail for the war zone. The frustration clause was adopted following the Sanday decision in the British courts, even though that case did not directly involve underwriters in a claim for the frustration of the voyage. The underwriters in covering war risks are willing to assume the hazards arising from the acts of the belligerents, but they do not wish to be responsible for a loss if the United States government should, for an reason, place an embargo on the sailings of vessels from this country to the Near East. In such an event it seems that the bank would be protected through its rights against the cargo. It is not the intention of underwriters to cover losses caused by delay or loss of market even though such losses may be indirectly due to a state of war. Underwriters have always protected themselves against such a possibility by inserting a clause excluding loss by delay or loss of market, and the frustration clause is simply an added safeguard against being held liable for losses of that nature.

## Important Argentine Decision

In connection with the River Plate controversy about an extension of time of coverage in that region, it is of great interest to note the following important decision as reported by Edward F. Feely, United States commercial attache at Buenos Aires:

"The Argentine Federal Court has just handed down a decision in a case to recover damage to a shipment of jerked beef resulting from the forced discharge of the cargo, and exposure to heat and moisture. The court holds that the underwriters are not responsible because the loss was occasioned by the inherent defect in the goods insured. This overrules the decision of the judge of the lower court in an action brought by C. C. Dickinson & Company against La Economia Commercial, an insurance company, to recover the loss on a shipment of jerked beef amounting to 80,602 pesos gold.

"The plaintiffs insured with the defendant company a shipment of jerked beef consigned to Habana and valued at 350,000 pesos gold. The bark carrying the shipment was obliged to put into Bahia, Brazil, because of rudder trouble, and on arrival at that port it was found necessary to discharge the cargo into lighters to permit of the boat's entrance into drydock.

"When the cargo was reloaded it was found that a large part of the beef was in bad condition, and it arrived at destination in such state that a loss of 80,602 pesos gold was taken to the shippers.

"The lower court deferred the case to arbitration, but an appeal was taken from this decision and the Federal Court has now overruled with costs to be divided by the parties.

"In its decision the upper court holds that the insurance policy was made free of particular average, and that the plaintiff has not proven that the beef was damaged by the freezing or by moisture caused by its being discharged at the port of Bahia. That even though this had been proven, the company would not

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740 SOUTH BROADWAY
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CHARLES R. PAGE, Manager
ATLANTIC MARINE DEPARTMENT
72 BEAVER STREET NEW YORK

309 COLMAN BUILDING, SEATTLE, WASHINGTON

have been responsible, since it has shown that damage was caused by the inherent defect of the goods insured.

"It is an established principle that damage to goods which by their very nature are susceptible of deterioration or total loss is due to inherent defect unless other cause of loss resulting from the dangers of the sea is proven, even though the vessel be obliged to put into port in distress."

## License Suspension Insurance

Apparently a prosperous business is being driven in England in the recently inaugurated coverage of British sea-going officers against the risk of a suspension of their licenses. The Navigators & General Insurance Company is issuing the policy. The annual premium is 12/6, the company guaranteeing the assured during suspension the payment of a monthly sum equaling his monthly salary, and also a full allowance for food, accommodation and attendance of a nature identical with that provided the policyholder at the time of his suspension. The maximum monthly payment is £50.

## Uniform Marine Laws Urged

At the recent meeting of the National Convention of Insurance Commissioners, held at Swampscott, Massachusetts, one of the outstanding features was the presentation of a carefully drafted law, sponsored by the American Institute of Marine Underwriters, that was urged for adoption by the various states in order that American marine insurance may no longer be stifled by the varied and serious legal handicaps now imposed. A number of the most prominent marine underwriters of the country were on hand to further the interests of the measure and explain to the commissioners its vital importance. The submitted measure was, in the main, modeled after the recently enacted law of the District of Columbia on marine insurance, with the important difference that it excluded the provision for multiple line writing which was so bitterly opposed by casualty and other underwriters. It was finally referred to the following committee of eight commissioners: Stoddard of New York, chairman; Mansfield of Connecticut; Gearhart of Ohio; Miller of the District of Columbia; Hobbs of Massachusetts; Button of Virginia; McCabe of California, and Donaldson of Pennsylvania. This committee is to hold frequent meetings at New York during the next few weeks and will report its findings at the December meeting of the commissioners.

## Changes in Eastern Offices

No successor has as yet been appointed to Guy Carpenter, who recently resigned as manager of the Cotton Insurance Association, and it is not expected that such an appointment will be made in the near future.

George Brown has been transferred by the American Bureau of Shipping from Havre, France, to Panama, as an exclusive surveyor.

W. H. McGee, Jr., has resigned from his father's firm and joined the staff of Miller, Schmidt & Company, Inc., marine and general brokers, New York.

F. B. O'Grady, Buenos Aires correspondent of the Board of Underwriters of New York and the representative of the American Foreign Insurance Association at that point, has been a recent New York visitor.

The annual meeting of the American Institute of Marine Underwriters was held at New York October 2.

Shipments of Egyptian cotton, the bulk of which goes to the mills of New England, indicate that Field & Cowles of Boston continue to retain their pre-eminence as writers of American consignments of this commodity.

W. W. Nichols, correspondent of the Board of Underwriters of New York at St. Michaels, Azores, was a New York visitor recently.

A local underwriter in commenting on the low insurance rate prevailing for grain by liners on transatlantic voyages referred to it as a grand gesture or a little window dressing.

Reports from England are to the effect that the hull market there is showing signs of active revival.

C. F. H.

# On the Pacific

## Change in Board Secretaries

After serving the San Francisco Board of Marine Underwriters as secretary for twenty-five years, Edmund L. Woods has tendered his resignation and it has been accepted by the executive committee.

Mr. Woods was born in London in 1848. He entered the marine insurance business while a young man, going to San Francisco in 1872 to manage the Union Marine. He remained with this concern until its dissolution in 1897, when he was appointed Pacific Coast marine agent for the Union Marine and Maritime of Liverpool. He was elected secretary of the board at this time, remaining actively in this capacity until May, 1921, when he returned to England on leave of absence for what was expected to be a short visit.

Mr. Woods was well liked and leaves many friends in Pacific marine circles. Besides being an able secretary he was as well a brave man. The story is told of his entering the hold of a gas-filled grain ship in a vain attempt to rescue Fred R. Catton, Lloyd's surveyor. This incident occurred in 1889 at Port Costa, California. After a fire on the bark Durham had been extinguished, Fred R. Catton, Walter Cove, Captain Freeman and Mr. Woods boarded the ship to ascertain the extent of damage. Catton and Freeman entered the hold, followed by Cove, who reported to Mr. Woods that his companions had been overcome. Mr. Woods immediately fastened a rope around his waist and was lowered into the hold, emerging with the body of Catton. Captain Freeman also lost his life at this time, his body being recovered by a sailor, as Mr. Woods was exhausted from his efforts.

Such events as this, together with the manner in which he carried out his duties as secretary, made many friends for Mr. Woods.

## New Secretary Elected

The election of John Waddington as secretary to the Board of Marine Underwriters of San Francisco follows the acceptance of the resignation of Mr. Woods. Mr. Waddington has been carrying on the work of secretary to the board during the absence of Mr. Woods, so is quite capable of continuing under his new title.

Also a native of London, Wr. Waddington entered the marine insurance business in 1901. From that date until 1914 he was chiefly engaged in this occupation. Entering the Canadian army in 1914 as a private he returned in 1918 as captain, after an enviable war record, to be employed in the adjusting department of Willcox, Peck & Hughes. He resigned this position in May, 1921, to become acting secretary to the board. Mr. Waddington goes to the board with considerable knowledge of marine insurance, having served both as underwriter and adjuster.

## Brighter Outlook

It is the feeling abroad that hull rates are due for a sharp increase. It is reported that a number of fleets in London are being renewed far ahead of the expiration dates in order to take advantage of the present low insurance market. At the same time the contracting for the renewal of hull insurance for such an unusual time in advance of the attaching dates indicates confidence on the part of the operators in being able to keep their ships moving.

Although on the Pacific Coast there does not seem to be a threatened increase in hull rates, ship operators, especially those engaged in the coastwise lumber trade, have been successful in keeping their steamers operating.

Taking into consideration the amount of premium returned due to vessels being laid up on account of the recent seamen's strike and during the period of readjustment, the steady employment of these vessels in their trade means a more stable income to underwriters.

As a general rule the marine insurance business on the Pacific is improving. The exports during the month of August of this year showed a marked increase over those during the same month of last year.

## Revision of Method of Taxation

A new method of taxing marine insurance companies was presented by counsel for the American Institute of Marine Underwriters to the National Association of Insurance Commissioners at their recent meeting.

Under the suggested system marine companies would be taxed on underwriting profits, income from reserves and income from investments. The measure provides that the insurance commissioner ascertain the total average annual underwriting profit over a period of five years and base the tax to be imposed upon the earnings over this period. After the first year the tax shall be based on a five years' experience. Under this measure the tax is to be based upon the net profit. The opposition held that the padding of the expense would enable the insurance companies to defraud the government, but this is improbable, as the expenses are practically the same from year to year.

The method of averaging the profit over a term of five years is very good, as marine insurance as well as any other branch of insurance should be based upon a working period of not less than this time. Many companies during the last few years had this experience of paying large taxes for one year and the next two or three years showing large losses. If they were taxed on a basis of five years' working the taxes would be more just and equitable.

## Towing Vessel Held Responsible

A recent decision of the United States Circuit Court of Appeals held that a towing vessel, having knowledge of storm, was liable, notwithstanding act of other was direct cause of stranding. The text of the decision is as follows:

"Negligent towage—Towing vessel held responsible for damages exceeding $300,000 to the bark Aggie for taking her to sea while a violent storm was raging at the entrance to San Francisco Bay, where the captain of the towing vessel had the knowledge of the existence of the storm four hours prior to the departure from the harbor and could have turned back into the harbor when he saw the effect of the storm at the outer heads.

"Proximate cause—Where the captain of a vessel towed into a storm suffers great physical and mental strain and exhaustion for the two days of the storm and after two days of fair weather runs on to a reef appearing upon his chart, which he fails to observe because of such exhaustion, the wrongful towage of the vessel into the storm is the proximate cause of the wreck upon the charted reef."

This decision was rendered on the case of the Aggie versus the Edgar H. Vance.

The Aggie was towed to sea by the Vance during a severe storm at the entrance to San Francisco Bay. Both masters were aware of the approaching storm and also of its magnitude. The wireless operator aboard the Vance intercepted a message from the Farallone Islands that the wind there was from the northwest with a velocity of 65 miles an hour. Disregarding this information he set to sea with the Aggie in tow. The wind at the Farallone station increased to a velocity of 93 miles an hour. It did not appear that the captain of the Vance made any inquiry regarding the wind's velocity after receiving the intercepted message from the Farallones and he admitted in his testimony that he could have returned the Aggie to the anchorage from which he took her.

After continued heavy weather, during which several members of the crew were injured, including the captain, the Aggie was set adrift. The captain of the Aggie decided to make the port of San Pedro, and it was while attempting this that the vessel went ashore and became a total loss. On charts used by the Aggie the shoal on which she struck was outlined, but the captain was unable to see it due to his physical condition on account of injuries received during the heavy weather.

## Marine Study Class Meets

On October 10 the marine insurance study class of the Association of Marine Underwriters, San Francisco, met in the board rooms. Carrol Single of Messrs. McClanahan & Derby was the speaker for the evening, the discussion being on the "Perils of the Sea and Fire." The class, which was the first after the discontinuance this summer on account of the vacation season, was well attended. J. E. S.

# AMERICAN SHIPBUILDING

## A Survey of Current Activity, Including Work in Prospect, Recent Contracts, Yard Notes, Progress of Construction and Repairs of the Month

### Recent Contracts

**American Bridge Company,** Pittsburgh, twenty coal barges, American Steel & Wire Company, 175 feet by 26 by 11. Two fuel flats, undisclosed interests, 90 feet by 18 by 4-6.

**Collingwood Shipbuilding Company,** Collingwood, Ontario, canal-sized freighter, 252 feet by 43 by 14 loaded draft, 9½ knots speed, 2500 DWT, TE engine.

**New York Shipbuilding Corporation,** Chester, Pennsylvania, two carfloats, Brooklyn Eastern District Terminal, 340 feet long.

**Staten Island Shipbuilding Company,** Staten Island, freighter, Catskill Evening Line, 180 feet by 30 by 11-4 draft, 1076 gross tons.

**Sun Shipbuilding Company,** Chester, Pennsylvania, three grain barges, 150 feet by 30 by 14 loaded draft, for Pennsylvania Railroad; passenger and supply steamer, 169 feet 6 inches between perpendiculars by 30 by 14 loaded draft, for Commercial Pacific Cable Company.

**Dravo Contracting Company,** Pittsburgh, two 135-ton barges, builder's account.

**Great Lakes Engineering Works,** River Rouge, Michigan, 350-ton ferryboat, Walkerville Ferry Company.

**Howard Shipyards Company,** Jeffersonville, Indiana, two 500-ton river steamers.

**Bethlehem Shipbuilding Corporation,** Sparrows Point Plant, two freighters, 233 feet 6 inches between perpendiculars by 40 by 15 feet 6 inches loaded draft, 11 speed, 1340 DWT, reciprocating engines, for Eastern Steamship Company.

**Newport News Shipbuilding & Drydock Company,** two combination steamers, Ocean Steamship Company of Savannah, 382 feet between perpendiculars by 52 by 18 feet 6 inches loaded draft, 3500 DWT, 12½ knots, triple-expansion engines, 2900 IHP.

### Keel-layings

Barge, Rockland & Rockport Lime Corporation, New York Shipbuilding Corporation, September 11.

Youngstown, ferryboat, Erie Railroad, Staten Island Shipbuilding Company, May 12, two ferryboats City of New York, August 19; Hudson River vehicular tunnel tube, August 26.

Two grain barges, Pennsylvania Railroad, Sun Shipbuilding Company, October 2 and 9.

Two freighters, Eastern Steamship Company, Bethlehem Shipbuilding Corporation, Sparrows Point Plant, both August 29.

Car float, Bush Terminal, Bethlehem Shipbuilding Corporation, Harlan Plant, September 18.

### Launchings

Freighter, undisclosed interests, Federal Shipbuilding Company, October 7.

James MacNaughton, freighter, Wilson Transportation Company, Great Lakes Engineering Works, September 23.

Ohio, diesel yacht, Cox & Stevens, Newport News Shipbuilding & Drydock Company, September 16.

Barge, Rockland & Rockport Lime Corporation, New York Shipbuilding Corporation, September 7.

Haleakala, passenger steamship, Inter-Island Steam Navigation Company, Sun Shipbuilding Company, September 18.

Ste. Genevieve, sidewheel car ferry, Missouri-Illinois Railroad, Charles Ward Engineering Works, September 21.

Shasta, ferryboat, James Rolph & Company, Bethlehem Shipbuilding Corporation, Union Plant, October 5.

Two car floats, Lehigh Valley Railroad, Bethlehem Shipbuilding Corporation, Baltimore Drydock Plant, August 24 and September 13.

### Deliveries

Six decked barges, last of fifteen for United States Engineers, American Bridge Company.

Kamoi, fuel ship, Japanese Navy, New York Shipbuilding Corporation, September 12.

Two car floats, Lehigh Valley Railroad, Bethlehem Shipbuilding Corporation, Baltimore Drydock Plant, August 3 and September 2.

### Work in Prospect

Senator Poindexter of Washington expects favorable action by Congress during the next session on a bill appropriating $400,000 for a lightship for Grays Harbor.

The Carey-Davis Tow & Barge Company, Seattle, is reported to be planning two 350-horsepower diesel tugs.

### World Shipbuilding

World shipbuilding is now far below the pre-war level, both in regard to orders placed and the volume of work actually under way, says a statement issued by Lloyd's Register of Shipping. This is due to a decline of more than half a million gross tons in three months.

Returns for the quarter ended September 30 show that of the more than 500,000 tons decrease, 300,000 tons represents the falling off in work in British Shipbuilders' hands, while the decline for all other nations combined, excluding the United States, is about 230,000 tons. American shipyards still have as much tonnage in hand as they did three months ago, but the total is only 2000 tons above the small pre-war aggregate for this country. The following table shows the volume of work September 30 as compared with the previous quarter in gross tons:

| | Oct. 1 | July 1 |
|---|---|---|
| United States | 150,623 | 150,623 |
| United Kingdom | 1,617,045 | 1,919,504 |
| Other countries | 934,888 | 1,165,303 |
| World total | 2,702,556 | 3,325,430 |

Taking into consideration only construction actually under way, however, the decline has been much sharper than indicated. Suspensions of work during the three months ending September 30 aggregated 419,000 gross tons in the United Kingdom, as against only 256,000 tons in all other countries. On this basis the total of world shipbuilding is 900,000 tons less than before the war, as shown by the following table of tonnage for the two periods:

| | Oct. 1, '22 | July 1, '14 |
|---|---|---|
| United Kingdom | 1,198,000 | 1,747,000 |
| Other countries | 829,000 | 1,199,000 |
| World total | 2,027,000 | 2,946,000 |

Even on the basis of 2,702,556 gross tons in hand, it will be seen that world shipbuilding is 244,000 tons below the pre-war level.

Returns from all countries of the construction work being done under the supervision of Lloyd's Register and intended to be classed with that society show a total of 1,640,425 gross tons, of which 1,210,812 tons represent orders placed in the United Kingdom. More than 60 per cent of the seagoing merchant tonnage building throughout the world, therefore, is being classed by Lloyd's and three-fourths of the total in Great Britain.

A striking indication of how the volume of shipbuilding is falling off through the scarcity of new orders to replace work being completed is given in figures showing that during the past quarter the shipyards of all countries combined started on new work aggregating only 187,527 gross tons, while in the same period 476,070 tons of shipping were launched, the launchings being more than two and one-half times the volume of the new work. In the United Kingdom the disproportion was much greater, the new work there totaling only 82,108 tons, compared with 306,812 tons launched, the work being brought towards completion being nearly four times the amount of new construction started. In the previous quarter British shipyards launched only 148,606 tons.

There has also been a sharp decrease in the construction of tankers throughout the world, the decline during the past quarter having been about 140,000 gross tons, the work now under way comparing with that at the beginning of the year as follows, in gross tons, a reduction of more than one-half:

| | Jan. 1 | Oct. 1 |
|---|---|---|
| United States | 103,000 | 26,780 |
| United Kingdom | 536,000 | 306,971 |
| Other countries | 154,000 | 57,494 |
| World total | 793,000 | 391,245 |

There was no change in the status of the smaller shipbuilding countries during the past quarter. The lead is still held by Italy, with France, Holland and Japan following in the order named, and all of them with more tonnage under way than have American shipyards. The United States, however, still leads the British Dominions. All of the smaller countries show a decline from the previous quarter, as indicated by the following table of tonnage under way at the two periods:

| | Oct. 1 | July 1 |
|---|---|---|
| Italy | 210,114 | 285,671 |
| France | 197,065 | 243,290 |
| Holland | 177,024 | 226,318 |
| Japan | 96,897 | 115,512 |
| British Dominions | 40,555 | 49,960 |

That Germany is now beginning to feel a decline in the demand for new construction is indicated by the returns to Lloyd's Register, which estimate the total under way in German shipyards and those of Danzig at 390,000 tons. On July 1, it was reported that Germany alone was building 500,000 tons and Danzig 45,000 tons of seagoing merchant ships.

Of the present total of world shipbuilding, 60 per cent is in British shipyards, 6 per cent in American and 34 per cent in other countries. The six per cent for the United States compares with ten times that figure at the height of shipbuilding activity in this country in the post-armistice period. This country's present construction figure of 150,000 tons compares with 4,186,000 tons at the peak, and the present world total of 2,702,000 tons with the world peak of 8,048,000 tons, the decline in the American figure being 4,036,000 tons, and for the world 5,346,000 tons.

The decline in shipbuilding activity during the past year in the United States and the United Kingdom is shown by the following table of tonnage in hand at the dates named:

| | U. K. | U. S. |
|---|---|---|
| October 1, 1921 | 3,283,000 | 434,000 |
| January 1, 1922 | 2,640,000 | 216,000 |
| April 1, 1922 | 2,236,000 | 136,000 |
| July 1, 1922 | 1,919,000 | 150,000 |
| Oct. 1, 1922 | 1,617,000 | 150,000 |

The Union Oil tanker Lyman Stewart, which grounded at Point Lobos, south of the Golden Gate, San Francisco, after a collision with the Luckenbach steamship Walter A. Luckenbach. Insurance on the hull of the Lyman Stewart, about $1,200,000, was placed in London; about $300,000 on her cargo of oils was placed in San Francisco. The Union Plant, Bethlehem Shipbuilding Corporation, will repair the Walter A. Luckenbach. Photo by Swadley, San Francisco.

## Repair Awards

**Los Angeles Shipbuilding & Drydock Corporation,** conversion of California & Oregon Steamship Company's steamship Cowiche to oil-burner, $29,592. The next low bidder was the Hanlon Drydock & Shipbuilding Company, $38,800. The Cowiche is a Lake type vessel.

**Peabody Engineering Company,** contract for oil-burners for Leviathan, which is being reconditioned by the Newport News Shipbuilding & Drydock Company.

**Moore Shipbuilding Company,** enlarging purser's quarters and staterooms of Shipping Board steamship President Wilson, $8000. The next low bidder was the Crowley yard, $9800. Also U. S. A. T. Grant reconditioning, about $10,000.

**Honolulu Iron Works,** extensive repairs to steamship Valdura, caused by grounding at Honolulu, $73,000 and 24 days. Catton, Neill & Company bid $80,000 and 50 days. Other work, aside from grounding damage repairs, will make the total cost in excess of $100,000.

**Moore Shipbuilding Company,** repairs to American-Hawaiian steamship Floridian, damaged in collision with Union Oil tanker La Purisima, $19,815; La Purisima, $3500. The Bethlehem Shipbuilding Corporation was second in both cases with $21,110 and $5200. Also reconditioning Alaska Packers' sailers Edward Sewell and Araphoe.

**Bethlehem Shipbuilding Corporation, Union Plant,** repairs to Luckenbach steamship Walter A. Luckenbach, damaged in collision with Union Oil steamship Lyman Stewart, $20,934.

**Federal Shipbuilding Company,** reconditioning of Pacific Mail Steamship Caldas (bought of Caribbean Line), about $35,000.

**The William Cramp & Sons Ship & Engine Building Company,** general reconditioning of tanker Alameda, damaged by fire.

## News of the Yards

The Port of Portland commission, an Oregon state body, will purchase a 15,000-ton floating drydock built by the municipal commission of public docks.

* * *

Four vessels will be built by the Imperial Railways of Japan for the Aomori-Hakodate channel service. The keel of the first was laid by the Uraga Dockyard August 8.

* * *

A modified bill has been drafted by the Japanese Department of Communications for aid for the construction of 500,000 tons of large passenger vessels, and has been submitted to the Finance Department. The original plan called for yen 250,000,000; the amount provided in the revised draft is not known.

* * *

The International Shipbuilding Corporation's yard at Pascagoula, Mississippi, constructed during the war to build vessels for the Italian government, will be sold at auction beginning October 26.

* * *

Eleven former general foremen of the J. F. Duthie & Company shipbuilding yard at Seattle have sued for $33,333.33 each. The claim is based on a verbal promise said to have been made December 23, 1918, that $500,000 would be divided if the foremen would decline offers of employment elsewhere.

* * *

A contract for reconditioning the Texas Company's steel tank steamship Louisiana has been placed with the Todd Shipyards Corporation. In addition to the reconditioning work, Todd mechanical fuel oil burners and necessary auxiliary equipment will be installed. The Louisiana was taken to the plant of the Robins Drydock & Repair Company, Brooklyn, where the work will be done.

* * *

Edward S. Hough, well known consulting engineer and marine surveyor of San Francisco, returned September 29 from an extended trip to Europe, during which he investigated shipbuilding and shipping conditions, particularly in the United Kingdom. Mr. Hough reports that shipbuilding there is in much the same condition as on the American seaboard.

Shipbuilders of the United Kingdom, however, he reports as more optimistic in their outlook for the future, and attributes this optimism to the fact that most of the United Kingdom shipbuilders have been in business for several generations and have passed through numerous similar periods of depression in their own past experience.

Mr. Hough had a very interesting time at the famous shipyard of William Doxford & Sons at Sunderland, where he made the acquaintance of William Doxford and of Mr. Keller, the chief engineer. While at Doxford's Mr. Hough saw the 3000-horsepower two-cycle Doxford diesel engine placed in the Norwegian motorship Ekneren, sister ship to the Yngaren.

* * *

The performance of the City of New York's fireboat James Duane during her official tests indicated that she will be one of the most efficient fire fighters afloat. Under the most exacting conditions she exceeded the expectations of the engineers and demonstrated her ability to handle more water a minute than the guarantees called for. The tests were held at the Clinton plant of the Todd Shipyards Corporation, where new turbines and pumps have just been installed, in the presence of the fire commissioner, Thomas Drennan, and other officials from the fire department and the National Board of Underwriters.

The new pumps are Lea-Courtney centrifugal single-stage, double-suction, driven by Westinghouse steam turbines. Against a nozzle pressure of 150 pounds, the pumps discharged 9800 gallons of water a minute; against a nozzle pressure of 175 pounds, the pumps delivered 7900 gallons, and against a nozzle pressure of 300 pounds the pumps delivered 4850 gallons. The guarantee called for 9000 gallons of water against a nozzle pressure of 150 pounds; 7500 gallons of water against a nozzle pressure of 175 pounds; 3000 gallons of water against a nozzle pressure of 300 pounds. Against a nozzle pressure of 90 pounds, from all appearances, the pumps would be able to deliver 12,000 gallons of water a minute, in case it were necessary to flood the hold of a ship.

* * *

Contracts have been let to the Todd Shipyards Corporation, Seattle plant, for the installation of seventy-two burners and a new furnace front on the Admiral steamship H. F. Alexander; for the installation of an oil-burning system on the China Mail steamship Nanking and the Los Angeles Shipbuilding & Drydock Company's steamship Elabeto.

* * *

Dates for auction sales in November at the Hog Island and Sparrows' Point yards have been announced by the material sales division of the United States Shipping Board Emergency Fleet Corporation. The auction at Hog Island will be conducted by Samuel T. Freeman & Company November 1, 2 and 3. The material that will be included in this auction consists of plant equipment, machine tools, grinders, hydraulic presses, oil furnaces, high speed drills and reamers, ship machinery and equipment, such as winches, binnacles, running lights, anchors, wood and steel blocks, and electrical equipment. The auction at Sparrows' Point will be held November 22 by M. Fox & Sons Company, Baltimore. The material at this location is principally material declared surplus through cancellations of the 13,000-ton passenger and cargo ships that were being built by the Bethlehem Shipbuilding Corporation at this location. It consists of anchors, chain, boilers, distillers, filters, generator sets, capstans, steering engines, winches, windlasses, pumps of various sizes and types, oil coolers, galvanized tanks and a large quantity of valves and pipe fittings.

* * *

The Babcock & Wilcox Company, New York, has been awarded the contract to supply four watertube boilers for the two new river steamers to be built for the Wilmington Steamboat Company by the Pusey & Jones Company, Wilmington, Delaware, from designs by the George G. Sharp Company, naval architects and consulting engineers, New York. The boilers will be of two-inch tube type, having each 3739 square feet of heating surface, or a total for two boilers, for each vessel, of 7478 square feet. They will be arranged for oil fuel and will be equipped each with five Babcock & Wilcox mechanical atomizing oil burners, Cuyama type, operating under assisted draft.

* * *

Contracts for the installation of Todd mechanical fuel oil burners in twelve passenger and freight vessels have been awarded to the Todd Shipyards Corporation. These vessels, totaling 78,100 indicated horsepower, are the Empress of Scotland of the Canadian Pacific, the Calamares, Pasteres, Limon, Esparta and San Jose of the United Fruit Company, the El Cid, El Sigle, El Dia and El Rio of the Southern Pacific Company and the City of Jacksonville of the Mallory Line. The big Red Star liner Kroonland is being fitted with Todd mechanical oil burners in place of an older type that was installed some time ago. To date, the Todd Corporation has equipped nearly 2000 vessels of all types with mechanical oil burners.

The work on the five fruit steamers, the El Sigle, El Cid and the Kroonland, is being carried out at the plant of the Robins Drydock & Repair Company in Brooklyn, while the El Dia, El Rio and the City of Jacksonville are being converted at the plant of the Tietjen & Lang Drydock Company in Hoboken. The Empress of Scotland will be fitted with Todd burners on her next arrival at an English port by Todd Oil Burners, Ltd., of London. She was formerly the Hamburg-American liner Kaiserin Auguste Victoria of 24,581 gross tons. There are fifty-one furnaces in this vessel and the decision of her owners to replace her oil burners with Todd mechanical burners followed the successful performance of the Canadian Pacific Railway's new liner Montclare burning oil under the Todd system. The Montclare was equipped by Todd Oil Burners, Ltd., of London before she left the yards of her builders, the John Brown Company, at Clydebank, Scotland.

* * *

For the convenience of its customers the Babcock & Wilcox Company has arranged a catalog listing materials that may be required from time to time in connection with the operation and upkeep of its boilers, copies of which may be obtained through any of the company's storerooms, located at New York, Baltimore, Norfolk, New Orleans and San Francisco. This catalog has been made as comprehensive as possible, all with a view of obviating any confusion in the ordering of spare parts and tools.

* * *

So many instances have been called to the attention of the Babcock & Wilcox Company where improper material has been supplied for use on its boilers that, for the security and convenience of its customers, it has established marine store rooms in New York, Baltimore, Norfolk, New Orleans and San Francisco, through which proper material may be obtained.

# Progress of Construction

## Pacific Coast

### BETHLEHEM SHIPBUILDING CORPORATION, LTD. UNION PLANT

#### Potrero Works

Purchasing Agent: O. W. Streett.

Submarines USN:

S-36, hull 141.
S-37, hull 142.
S-38, hull 143.
S-39, hull 144.
S-40, hull 145.
S-41, hull 146.

#### Alameda Works

Chilore, hull 5309, combination ore and coal carrier Ore Steamship Co; 571-6 LOA; 550-1 LBP; 72 molded beam; 44 molded depth; 32-4 loaded draft; 11½ loaded speed; 20,000 D WT; Curtis turbines with Falk reduction gears, 5000 SHP; 3 Scotch SE boilers, 17-6x12, each 4287 sq ft; oil burners; keel Apr17/22.

Lebore, hull 5310, combination ore and coal carrier Ore Steamship Co; sister to above.

Shasta, hull 5315, ferryboat Jas Rolph & Company; 230 LOA; 63-6 beam over guards, 42 molded; 19-6 molded depth; TE eng, 1400 IHP; propeller drive; 3 WT boilers; keel Feb20/22; **launch Oct5/22.**

Yosemite, hull 5316, ferryboat Jas Rolph & Company; sister to above; keel May12/22.

No name, hull 5317, tank barge Standard Oil Co (Calif); 210 LBP; 40 beam; 13-6 loaded draft; full diesel-electric drive.

### HANLON DRYDOCK & SHIPBUILDING COMPANY, OAKLAND, CALIF.

Purchasing Agent: R. Barker.

Dan F. Hanlon, hull 89, steam schr. D. J. Hanlon; 2500 DWT; 1400 IHP engines; 2 B&W boilers; work suspended.

### LOS ANGELES SHIPBUILDING & DRYDOCK CORPORATION, SAN PEDRO, CALIF.

Purchasing Agent: L. R. McFie.

Hayward, hull 37, double-ended steel ferryboat San Francisco-Oakland Terminal Railways; 225 LBP; 42 molded beam, 62-7 over guards; 11-6 loaded draft; 13 loaded speed; turbo-electric eng, 1350 IHP; 2 B& W WT boilers, 5000 sq ft total HS, 225 WP, 65 superheat, natural draft, oil-burning; keel June28/22; launching date not set.

San Leandro, hull 38, double-ended steel ferryboat San Francisco-Oakland Terminal Railways, sister to above; keel June28/22; launching date not set.

### NAVY YARD, PUGET SOUND

Medusa, repair ship for government; 460 LBP; 70 beam; about 19 loaded draft; 17-5 loaded speed; turbine eng, 7000 IHP; 2 WT express type boilers; 10,000 tons disp; keel Jan2/20; launch and deliver dates not set.

Holland, submarine tender for government; 460 LBP; 61 beam; about 20 loaded draft; 16 K loaded speed; turbine eng, 7000 IHP; two WT express type boilers; 10,000 tons disp; keel Apr11/21.

### NAVY YARD, MARE ISLAND

Montana, battleship USN; 660 LB P; 105 beam; 33 loaded draft; 23 loaded speed; 42,200 disp; turbo-electric engs, 60,000 SHP; 12 Bu's express boilers, 74,040 sq ft; keel Sept 1/20; to be scrapped.

### TODD DRYDOCK & CONSTRUCTION CORP., TACOMA

Purchasing Agent: C. L. Bankson.

Omaha, hull 100, scout cruiser US N; 555-6 LOA; 550 LBP; extreme beam 55-4; molded beam 54-9; depth molded 26; mean loaded draft 13-6; disp 7100 tons; Westinghouse Parsons turbines and reduction gear, 105,000 IHP; designated speed 34; 12 Yarrows WT boilers; keel Dec6/18; launch Dec14/20.

Milwaukee, hull 106, scout cruiser USN; sister to above; keel Dec13/18; launch Mar24/21.

Cincinnati, hull 107, scout cruiser USN; sister to above; keel May15/20; launch May23/21.

## Atlantic, Lakes, Rivers

### AMERICAN BRIDGE COMPANY, PITTSBURGH, PENN.

Purchasing Agent: W. G. A. Millar.

Fifteen decked barges, 120 LBP; 30 beam; 7 deep; US Engineers, Memphis, Tenn.; all delivered.

Two carfloats, Long Island R R Co, 292x42x11-6; under construction at Federal Shipbuilding Co, Kearny, N. J.; launch Oct/22, est.

Ten sand barges, undisclosed interests; 135x27x10; launchings Oct-Nov-Dec/22, est.

Two sand barges, Wilson Sand & Supply Co, Huntington, W Va, 135 x27x10; launch Jan/23, est.

Three decked barges, Patton-Tully Transportation Co, Memphis, 160x34 x7; launch Dec/22, est.

Twenty coal barges, American Steel & Wire Co., Pittsburgh; 175 x 26 x 11; launch 1923, est.

Two fuel flats, undisclosed interests; 90 x 18 x 4-6; launch Feb/23, est.

### THE AMERICAN SHIP BUILDING CO., LORAIN, OHIO

Purchasing Agent: W. H. Gerhauser.

No name, hull 781, bulk freighter H. K. Oakes Company; 596 LBP; 64 beam; 21 loaded draft; 12 mi loaded speed; 13,000 DWT; TE engs, 2400 IHP; 3 Scotch boilers, 14x11, 185 WP.

No name, hull 782, bulk freighter Pittsburgh Steamship Co; 580 LBP; 60 beam; 21 loaded draft; 12 mi loaded speed; 12,500 DWT; TE engs, 2300 IHP; 3 Scotch boilers, 13-6x11, 185 WP.

No name, hull 783, bulk freighter Pittsburgh Steamship Co; sister to above; keel Dec/22, est; launch Mar /23, est; deliver May/23, est.

No name, hull 784, bulk freighter G A Tomlinson Co; sister to above; keel Dec/22, est; launch Mar/23, est; deliver May/23, est.

### BATH IRON WORKS, LTD., BATH, MAINE

Purchasing Agent: John L. P. Burke.

Light vessel 106, hull 87, second-class light vessel US Dept of Commerce, 109-6 LBP, 30 beam, 14-4 loaded draft, 9½ speed; comp eng, 400 IHP; 2 Scotch boilers, 10-6 x 11-5; keel Apr12/22; launch Oct21/22, est; deliver Dec/22, est.

Light vessel 107, hull 88, sister to above; keel Apr14/22; launch Nov/22,est; deliver Jan/23, est.

Light vessel 108, hull 89, sister to above; keel May24/22; launch Jan/23, est; deliver Mar/23, est.

Light vessel 109, hull 90; sister to

above; keel May31/22; launch Mar/23, est; deliver Apr/23, est.

Light vessel 110, hull 91, sister to above; keel prior to Nov1/22, est; launch May/23, est; deliver June/23, est.

### BETHLEHEM SHIPBUILD'G CORPORATION, BALTIMORE DRYDOCK PLANT, BALTIMORE

Fort McHenry, hull 125, tanker builder's account; 340 LBP; 49 beam; 23-6 loaded draft; 10½ loaded speed; 6050 DWT; rec eng, 2000 I HP; 2 Scotch boilers, 15-6; keel Nov24/20; launch Feb1/22.

Hull 129, carfloat Lehigh Valley R. R.; 270 LBP; 38 beam; 10-6 loaded draft; keel Apr26/22; launch July22/22; **deliver Aug3/22.**

Hull 130, carfloat Lehigh Valley R. R.; 325 LBP; 38 beam; 10-6 loaded draft; keel Apr26/22; **launch Aug 24/22; deliver Sept2/22.**

Hull 131, carfloat Lehigh Valley R. R.; 180 LBP; 36 beam; 9 loaded draft; keel June3/22; **launch Sept 18/22.**

### BETHLEHEM SHIPBUILDING CORP., FORE RIVER PLANT, QUINCY, MASS.

Lexington, hull 1300, airplane-carrier U S N.

Raleigh, hull 1382, scout cruiser U S N.

Detroit, hull 1383, scout cruiser U S N.

Massachusetts, hull 1400, battleship U S N; to be scrapped.

S-27, hull 1318, submarine U. S. N.
S-28, hull 1319, submarine U. S. N.
S-29, hull 1320, submarine U. S. N.
S-42, hull 1389, submarine U. S. N.
S-43, hull 1390, submarine U. S. N.
S-44, hull 1391, submarine U. S. N.
S-45, hull 1392, submarine U. S. N.
S-46, hull 1393, submarine U. S. N.
S-47, hull 1394, submarine U. S. N.

### BETHLEHEM SHIPBUILDING CORP., HARLAN PLANT, WILMINGTON, DEL.

Hull 3478, yacht Keith Spalding; 150 LBP; 30 beam; 15-3 deep; 360 DWT; two 6 cyl 180 HP Nelseco diesel engs.

Hull 3479, carfloat Bush Terminal; **keel Sept18/22.**

Hull 3480, sister to above.
Hull 3481, sister to above.
Hull 3482, carfloat B. & O. R. R.

### BETHLEHEM SHIPBLDG. CORP., SPARROWS POINT PLANT, SPARROWS POINT, MD.

Steelore, hull 4213, ore and oil Ore SS Co; 550 LBP; 72 beam; 32-4 loaded draft; 11½ loaded speed; 20,000 DWT; turb eng, 4600 IHP; 3 Scotch boilers, 17-6x12; keel July 20/21; launch Aug15/22.

No name, hull 4214, freighter Eastern Steamship Company; 233-6 LBP; 40 beam; 15-6 loaded draft; 11 loaded speed; 1340 DWT; rec engs, 1300 IHP; 2 Scotch boilers, 13-9x11; **keel Aug29/22.**

No name, hull 4215, sister to above; **keel Aug29/22.**

### COLLINGWOOD SHIPBUILDING CO., LTD., COLLINGWOOD, ONTARIO

Hull 72, canal-sized freighter; 252 LBP; 43 beam; 14 loaded draft; 9½ loaded speed; 2500 DWT; TE surface-condensing eng, 750 IHP; 1 Scotch boiler, 14x10-9 HFD; keel Nov1/22, est.

### CONSOLIDATED SHIPBUILDING CORPORATION, MORRIS HEIGHTS, N. Y.

Purchasing Agent: Bruce Scrimgeour.

Zalophus, steel motor houseboat for John Ringling; 125 LOA; 21 beam; 4 draft; 12 speed; two 6-cyl 180 HP Nelseco diesel engs; keel Mar22/22; launch June24/22; deliver Nov1/22, est.

Steel motor cruiser for Charles Ringling; 120 LOA; 20 beam; 4 draft; 2 Speedway 6-cyl engs, 165 HP each; keel June30/22; deliver Oct15/22, est.

### WILLIAM CRAMP & SONS SHIP & ENGINE BUILDING CO., PHILADELPHIA

Purchasing Agent: Ed. C. Geehr.

Richmond, hull 448, scout cruiser U. S. N.; keel Feb16/20; launch Sept 29/21; 93.4 per cent comp Sept1/22.

Concord, hull 449, scout cruiser USN; keel Mar29/20; launch Dec 15/21; 87.2 per cent comp Sept1/22.

Trenton, hull 501, scout cruiser USN; keel Aug18/20; 56.5 per cent comp Sept1/22.

Marblehead, hull 502, scout cruiser USN; keel Aug4/20; 47.5 per cent comp Sept1/22.

Memphis, hull 503, scout cruiser USN; keel Oct14/20; 42.6 per cent comp Sept1/22.

General reconditioning, due to fire damage, of tanker Alameda, 10,000 DWT.

### DEFOE BOAT & MOTOR WORKS, BAY CITY, MICH.

Windsor II, hull 60, yacht G. W.. Megeath; 98 LBP; 15 beam; 6 draft; 14 speed; Standard gas eng; keel June28/22; launch Oct15/22, est.

No name, hull 61, yacht builder's account; sister to above; keel June 28/22; launch Oct15/22, est.

Priscilla Dean, hull 63, wood yacht K. M. Devos; 65 LBP; 12½ beam; 4 draft; 22 speed; gas eng; keel Mar 10/22; launch Oct25/22; est; deliver Nov5/22, est.

### FEDERAL SHIPBUILDING CO., KEARNY, N. J.

Purchasing Agent: J. L. Hastings.

Hull 68, freighter undisclosed interests; 425 LBP; 56 beam; 27 loaded draft; 11½ loaded speed; 10,025 DWT; Parsons turbines, 3100 SHP; 3 Scotch boilers, 15-3x11-3¾; keel Mar16/22; **launch Oct7/22.**

No name, hull 71, steel drill boat War Department, sub-contract from Dravo Contracting Company; 157 LBP; 52 beam; 12-9 deep; keel May 22/22.

No name, hull 72, coastwise passgr and frt Merchants & Miners Transportation Co; 350 LBP; 52 beam; 19 loaded draft; 12 loaded speed; TE engs, 2700 IHP; 4 SE Scotch boilers, 14-3x11; keel July 5/22; launch Nov15/22, est; deliver Jan15/23, est.

No name, hull 73, coastwise passgr and frt Merchants & Miners Transportation Co; sister to above; keel July24/22; launch Dec15/22, est; deliver Feb15/23, est.

Hull 74, steel car float, Long Island Railroad, 292 long; 43-8 beam; 11-6 deep; keel July26/22; deliver Nov1/22, est.

Hull 75, steel car float, Long Island Railroad; sister to above; keel Aug5/22; deliver Nov21/22, est.

### FRASER, BRACE, LIMITED, THREE RIVERS, QUEBEC

N. H. Botsford, hull 18, Lake freighter George Hall Coal Co. of Canada; 250 LBP; 43 beam; 16-6 loaded draft; 12 loaded speed; 3270 short tons DWT; TE eng, 1400 IHP, 19x32x56-36 stroke; 2 Scotch marine boilers, 14-7x10-8, coal burning; keel Feb/22; launch Aug19/22.

Frank A. Augsbury, hull 19, Lake freighter George Hall Coal Co. of Canada; sister to above.

Sister to above.

Sister to above.

### GREAT LAKES ENGINEERING WORKS, RIVER ROUGE, MICHIGAN

Purchasing Agent: H. O. Kretlow.

James MacNaughton, hull 242, bulk frt Wilson Tran Co, Cleveland; 580 LBP; 60 beam; 20 loaded draft; 11½ miles loaded speed; 11,800 gross, TE engs, 1880 IHP; 3 Scotch boilers, 13-6; keel May3/22; **launch Sept23/22**; deliver Oct1/22, est.

### JOHNSON IRON WORKS, D. D. & S. B. CO., NEW ORLEANS

Hull 163, steel oil barge, US Engrs, Mobile; 87 LBP; 28-4 beam; 7 loaded draft.

Hull 164, sister to above.
Hull 165, sister to above.
Hull 166, sister to above.
Hull 167, sister to above.
Hull 168, sister to above.

Hull 169, steel oil barge, Sou Paper Mills; 144 LBP; 32 beam; 8-6 loaded draft.

Hull 170, steel barge, Jno A Hunt Co; 48 LBP; 12 beam; 3-6 loaded draft.

Hull 171, sister to above.

Hull 172, quarter boat, US Engrs, Nashville; 60 LBP; 22 beam; 4 loaded draft.

Hull 173, sister to above.

Hull 174, fireboat, City of New Orleans; 138 LBP; 29 beam; 15-6 loaded draft; comp eng, 2 WT boilers.

Upatoi, hull 175, dredge, US Engrs, Montgomery; 100 LBP; 34 beam; 6-8 loaded draft.

### KYLE & PURDY, INC., CITY ISLAND, NEW YORK CITY

Purchasing Agent: T. A. Kyle.

No name, hull 154, steel ferryboat department of plants and structures, City of New York; 90 LBP; 30 beam; 6-8 loaded draft; 10 miles loaded speed; 100 DWT comb eng, 200 I HP; Roberts tube boilers.

### LAKE TORPEDO BOAT CO., BRIDGEPORT, CONN.

Purchasing Agent: C. D. Maxfield.

S-48, hull 48, submarine USN; launch Feb26/21; deliver Oct7/22, est.

### NAVY YARD, BOSTON

Whitney, destroyer tender No. 4 USN; 460 LBP; 60-10⅛ molded beam; 21-0½ normal draft; 16 loaded speed; 10,600 normal disp; geared Parsons turbs, 7000 SHP; 2 WT exp boilers; keel Apr 23/21; launching indefinite.

### NAVY YARD, PHILADELPHIA

Dobbin, hull 7, destroyer tender USN; 460 LBP; 60-10 beam; 21 loaded draft; 16 loaded speed; 10,600 tons disp; Parsons geared turb single screw engs, 7000 SHP; 2 WT boilers; keel Dec23/19; launch May 5/21; deliver date not determined.

Constitution, hull 8, battle cruiser USN; 850 LBP; 105-4 beam; 30-11½ loaded draft; 33½ loaded speed; 43,500 disp; electric drive, 180,000SHP; 16 WT boilers; keel Sept25/20; to be scrapped.

United States, hull 9, battle cruiser USN; 850 LBP; 105-4 beam; 30-11½ loaded draft; 33½ loaded speed; 43,500 disp; electric drive, 180,000 SHP; 16 WT boilers; keel Sept25/20; to be scrapped.

### NEWPORT NEWS SHIPBUILDING & DRYDOCK COMPANY, NEWPORT NEWS

Purchasing Agent: James Plummer, 233 Broadway, New York City.

West Virginia, hull 211, battleship USN; 600 LBP; 97-3½ beam; 30-6 mean draft; 32,600 normal disp; 21 speed; GE turbo-elec drive, 28,900 SHP; 8 B&W WT boilers, oil, 41,768 sq ft plus 4168 superheat; keel Apr 12/20; launch Nov19/21.

Constellation, hull 215, battlecruiser USN; 850 LBP; 101-8¼ beam; 31 mean draft; 43,500 normal disp; 33¼ speed, est; Westinghouse turbo-elec drive, 180,000 SHP; 16 WT boilers, oil, 198,000 sq ft plus 18,000 superheat; keel Aug18/20; to be scrapped.

Ranger, hull 215, battle-cruiser USN; sister to above; keel June23/21; to be scrapped.

Iowa, hull 258, battleship USN; 660 LBP; 105 beam; 33 mean draft; 43,200 normal disp; 23 speed; GE turbo-elec drive, 60,000 SHP; 12 White-Forster WT boilers, oil, 82,800 sq ft plus 8940 superheat; keel May17/20; to be scrapped.

Ohio, hull 265, diesel yacht Cox & Stevens; 172 LOA; 26 beam; 15-6 deep; keel Aug1/22; **launch Sept16/22**; deliver Nov/22, est.

No name, hull 266, combination str, Ocean Steamship Company of Savannah; 382 LBP; 52 beam; 18-6 loaded draft; 12½ loaded speed; 3500 DWT; TE engs, 2900 IHP; 4 Scotch boilers, 14-9x11-6.

No name, hull 267, sister to above.

### NEW YORK SHIPBUILDING CORPORATION, CAMDEN, N. J.

Purchasing Agent: L. G. Buckwalter.

Eurana, hull 264, bulk oil stock; 419-3 LBP; 56-3 beam; 25-9¼ loaded draft; 10¾ loaded speed; 9870 DWT; 3 cyl TE engs, 3000 SHP; 3 SE Scotch boilers, 15-10x11-4; keel Jan17/21; launch July16/21.

No name, hull 265, bulk oil stock; sister to above.

Saratoga, hull 199, battle cruiser USN; 874 LOA; 850 LBP; 105-5¼ extreme beam; 31 mean draft; 43,500 normal disp; 33¼ loaded speed; GE turbo-electric drive; 180,000 SHP; 16 WT boilers, 198,000 sq ft plus 18,000 superheat; keel Sept25/20; to be scrapped.

Colorado, hull 200, battleship USN; 624 LOA; 600 LBP; 97-3½ beam waterline; 30-6 mean draft; 32,600 normal disp; 21 loaded speed; Westinghouse turbo-electric drive, 28,900 SHP; 8 B&W WT boilers, 41,678 sq ft plus 4169 superheat; keel Mar29/19; launch Mar22/21.

Washington, hull 201, battleship USN, sister to above; keel June30/19; launch Sept1/21; to be scrapped.

Kamoi, hull 267, fuel ship Japanese Navy; 497-8 LOA; 67 beam; 28 designed draft; 15 loaded speed; 13,000 DWT; elec drive, 8000 SHP; 4 WT boilers; keel Sept14/21; launch June8/22; **deliver Sept12/22.**

Hull 270, barge Rockland & Rockport Lime Corporation; length 196-10; keel June 14/22; **launch Sept 7/22.**

Hull 271, sister to above; keel June19/22.

Hull 272, sister to above; keel Aug3/22.

Hull 273, sister to above; keel Aug8/22.

Hull 274, sister to above; **keel Sept11/22.**

Hull 275, car float Brooklyn Eastern District Terminal; 340 feet long; keel not laid.

Hull 276, carfloat Brooklyn Eastern District Terminal; 340 feet long; keel not laid.

Hull 277, sister to above, keel not laid.

### PORT ARTHUR SHIPBUILDING CO., PORT ARTHUR, ONT.

Purchasing Agent: W. E. Decker.

Hull 47, single-deck bulk freighter Mathews Steamship Co; 530 LBP; 58 beam; 12 loaded speed; 10,000 DWT; 3-cyl TE engs, 25½-41-67x42, 2100 IHP; 3 Scotch boilers, 13-6; keel May10x22; launch Aug12/22.

### THE PUSEY & JONES COMPANY, WILMINGTON, DELAWARE

Vice-president and general manager: W. G. Coxe.

State of Maryland, hull 1021, comb str, bay or sound type, Seaboard Bay Line Co; 320 LBP; 42-6 beam on 10′ WL, 58 over guards; 14-6 mean draft; 18 miles speed; about 800 DWT; 4-cyl TE engs, 3000 IHP; 4 Scotch boilers, 13-3x11-6; keel Mar 7/22; launch July25/22; deliver Oct 15/22, est.

State of Virginia, hull 1020, comb str, bay or sound type, Seaboard Bay Line Co; sister to above; keel Mar 1/22; launch Sept6/22; deliver Nov 18/22, est.

No name, hull 1024, steel screw day passenger steamer Wilmington Steamboat Co. (Wilson Line); 219 LBP; 59 beam at deck; 13-9 molded depth; 18 miles speed; 4-cyl TE engs, 2 B&W WT boilers.

No name, hull 1025, steel screw day passenger steamer Wilmington Steamboat Co. (Wilson Line); sister to above.

Floating grain elevator with steel deckhouse and steel frame tower Pennsylvania RR, Philadelphia; 100 LOA; 30 molded beam; 13 deep; operating machinery and 1 Scotch boiler 10x12-7½, 125 WP.

### STATEN ISLAND SHIPBUILDING COMPANY, STATEN ISLAND, NEW YORK

Purchasing Agent: R. C. Miller.

Youngstown, hull 740, ferryboat Erie R R Co; 206 LBP; 44-1 beam; 17-4 loaded draft; 1538 gross tons; rec engs, 1200 IHP; 2 Scotch boilers, 12-9x12-9; **keel May12/22.**

No name, hull 741, ferryboat City of New York; 215 LBP; 45 beam; 18 loaded draft; elec drive, 1900 IHP; 4 B&W WT boilers, 8000 sq ft HS; **keel Aug19/22.**

No name, hull 742, ferryboat City of New York; sister to above; **keel Aug19/22.**

No name, hull 743, ferryboat City of New York; sister to above.

Hull 744, Hudson River vehicular tunnel, erection, launching and delivery of river shaft, New York side; **keel Aug26/22.**

Hull 745, Hudson River vehicular tunnel, erection, launching and delivery of river shaft No. 1, New Jersey side.

Hull 746, Hudson River vehicular tunnel, erection, launching and delivery of river shaft No. 2, New Jersey side.

No name, hull 747, freighter Catskill Evening Line; 180 LBP; 30 beam; 11-4 draft; 1076 gross.

### SUN SHIPBUILDING COMPANY, CHESTER, PENN.

Purchasing Agent: H. W. Scott.

Haleakala, passenger vessel Inter-Is. Steam Nav. Co., Honolulu; 345 long; 46 beam; 32 deep; 16½ speed; 4-cyl TE engs, 5000 IHP; 4 B&W WT boilers; to carry 434 passengers; keel May16/22; **launch Sept18/22**; deliver Nov30/22, est.

No name, hull 54, grain barge Pennsylvania R R; 150 LBP; 30 beam; 14 loaded draft; **keel Oct 2/22.**

No name, hull 55, sister to above; **keel Oct9/22.**

No name, hull 56, sister to above; keel Oct16/22, est.

No name, hull 57, passenger and supply str Commercial Pacific Cable Co; 169-6 LBP; 30 beam; 14 loaded draft; 9½ loaded speed; 450 DWT; rec eng, 850 IHP; 2 Scotch boilers, 12x11; keel Nov1/22, est.

No name, hull 58, hopper dredge US Engrs; 245 LBP; 46 beam; 19-6 loaded draft; 10½ loaded speed; 2000 DWT; diesel-electric drive; keel Dec2/22, est.

No name, hull 59, sister to above; keel Dec9/22, est.

No name, hull 60, sister to above; keel Dec16/22, est.

No name, hull 61, sister to above; keel Dec23/22, est.

Munmotor, Munson S S Co, 3000 DWT; conversion from reciprocating to diesel engines.

### TEBO YACHT BASIN COMPANY, BROOKLYN, N. Y.

Purchasing Agent: R. C. Smith.

No name, hull 22, steel tugboat New York Central R. R.; 96 LBP; 25-6 beam; vert comp eng, 20x40-26; 1 Scotch boiler, 14-3x11-6; keel Aug 28-22, est; launch Oct28/22, est; deliver Jan1/23, est.

No name, hull 23, steel tugboat New York Central R. R.; sister to above.

No name, hull 24, steel tugboat New York Central R. R.; sister to above.

### THE TOLEDO SHIPBUILDING CO., TOLEDO, OHIO

Purchasing Agent: H. M. Ives.

No name, hull 174, cargo Kinsman Transit Co., Cleveland; 590 LBP; 60 beam; 20 loaded draft; 12 mi loaded speed; 12,000 DWT; TE eng, 2000 IHP; 3 Scotch boilers, 13-6; keel Sept5/22; launch Nov/22, est; deliver Apr15/23, est.

### THE CHARLES WARD ENGINEERING WORKS, CHARLESTON, WEST VIRGINIA

Purchasing Agent: E. T. Jones.

Gen'l Frank M. Coxe, hull 17, river str War Dept; 144 LBP; 28 beam; 9 loaded draft; 16 miles loaded speed; 175 DWT; TE eng, 1050 IHP; 2 Ward WT boilers, 2094 sq ft heating surface; keel July 16/21; launch Mar3/22; deliver Nov1/22, est.

Gen'l John McE. Hyde, hull 18, river str War Dept; sister to above; keel July18/21; launch Mar11/22; deliver Nov1/22, est.

Ste. Genevieve, hull 20, sidewheel car ferry Mo.-Ills. R. R. Co., subsidiary of St. Joseph Lead Co; 285 LBP; 54 beam; 5 loaded draft; 820 DWT; simple HP non-condensing eng, 22 in dia by 8 ft stroke, 200 lbs WP; 6 Miss River type boilers, 44 in dia, 26 ft long; keel June8/22; **launch Sept21/22**; deliver Oct14/22, est.

## Repair Work

### BETHLEHEM SHIPBUILDING CORPORATION, LTD.

### Union Plant

Miscellaneous: Wyadda, K. R. Kingsbury, H. M. Storey, S. C. T. Dodd, Geo. L. Olson, S. O. Barge No. 15, Whitney Olson, Daisy Mathews, Traveler. Miscellaneous repairs: Liebre, Standard Arrow, Lurline, Pleiades, Mexico, Argyll, A. H. Payson, Arabs, President Taft, Miss Ship, Halco, Coalinga, Matsonia, Cahokia, Providencia, President Lincoln, Oleum, Cowrie, George Washington, Harry Luckenbach, Nevada, Mexico, Clam, Hauraki, Los Angeles. Drydocking, painting, miscellaneous repairs: Lena Luckenbach, Standard No. 1, W. S. Porter, La Purisima, Johan Poulsen, Oregon Gold, Manoa, Admiral Schley, Medon, Johanna Smith, Bangor, Venetia, Manukai, Albertolite. Drydocking, painting, extensive repairs: Wm. F. Herrin. Drydocking, miscellaneous repairs: Edward Luckenbach, Gov. Irwin. Drydocking, minor repairs: Pennsylvania, New Mexico. Drydocking: U. S. S. Oklahoma, Cethana, West Faralon (also painting). Extensive repairs: J. A. Talbot, Stanwood, Wm. Donovan, Yorba Linda. Conversion to oil burner: Mahukona (ex Coverun), Washington. Propeller installations: Charlie Watson (bronze propeller), Annie Johnson (tailshaft and propeller), Bandon, Daisy Freeman. Two bronze water ends: Dewey. Windlass gear: Cricket. Tailshaft: Ventura or Sonoma, West Coyote, San Pablo. Installing cargo gear and alterations: Mahukona (ex Coverun), Makaweli (ex Cowee), Makena (ex Cowboy). Shaft: Oakland or Transit, New section of stern frame: Wm. F. Herrin. Section of tailshaft: Johanna Smith. Sixteen sets piston rings: Redondo. Renew 52 feet keel: Annie Johnson. Repair copper pipe: Huntsman. Worm for anchor windlass: Jacob Luckenbach. Tracings for rearrangement: President Wilson. Miscellaneous: Lyman Stewart (24 valves), Matsonia (installed children's playground), J. B. Stetson (renew telegraph), A. L. Kent (burner parts), H. M. Storey (wrench for main engine), Trinidad (windlass repairs), Las Vegas (three sets wearing parts for piston rod), Wilhelmina (seating for winches), Los Angeles (repair whistle), Barge No. 93 (winch pinion), Coalinga (dynamo parts), W. S. Rheem (two castings), F. S. Loop (snap rings), Oleum (brass pipe), Providencia (two capstan cylinders), Standard No. 1 (one C. I. propeller), Annette Rolph (cap for winch shaft), Wilhelmina (H. P. piston rings). Feed pump repairs: West Catanace. Hull repairs: Floridian. Engine repairs: Wellesley. Air pump repairs: Cabrillo. Minor repairs: Benefactor.

### HANLON DRYDOCK & SHIPBUILDING CO., OAKLAND, CALIF.

Cleaning and painting: S. S. Adventuress, S. S. Chiapas, S. S. Chihuahua (also engine room repairs), Tamalpais, schr. Taurus, S. S. Phoenix, schr. Minnie A. Caine (also calking and hull repairs), schr. Wm. H. Smith (also calking and hull repairs), bktn. Monitor (also calking and hull repairs), S. S. Svea( also hull repairs), S. S. Capt. Gregory Barrett (also overhauling), S. S. Helen P. Drew (also miscellaneous repairs), S. S. Coquille River (also miscellaneous repairs), S. S. Pacific River (repairing hull damage). General overhauling and rebuilding: dredge Sacramento, dredge San Joaquin. General overhauling: M. S. Culburra, Light Vessel No. 83, S. S. Rosalie Mahoney, S. S. Santiom. New tail shaft: S. S. Eldorado. Calking repairs: S. S. Saginaw.

### LOS ANGELES SHIPBUILDING & DRY DOCK CORP., SAN PEDRO, CALIF.

Minor machinery repairs: M. S. Sierra, S. S. West Greylock, S. S. Sabine Sun, U. S. C. G. S. Cahokia. Piping repairs: S. S. Steel Navigator, S. S. Edgar F. Luckenbach, S. S. Idaho, S. S. San Joaquin, S. S. Albert Jeffries (also miscellaneous repairs). Dock, clean and paint: S. S. Principio (also miscellaneous machinery repairs), S. Y. Casiana, Yacht Northtown, Schr. Lily (also minor hull repairs), S. S. Moreno (also extensive hull and machinery repairs), S. S. LaBrea (also extensive machinery and hull repairs). Boiler repairs: S. S. Anne Hanify (main boiler), S. S. Harry Luckenbach, S. S. Roman Prince. Extensive overhauling—transforming from coal burning to oil burning system: S. S. Elabeto. Retubing condenser: S. S. Guerrero. Deck repairs: M. S. Siskiyou. Main engine repairs: S. S. Wabash. Auxiliary machinery repairs: S. S. Willhilo. Repairs to rigging: Launch Music. Hull repairs: S. S. La Brea. Unload yacht Seabee and place in water: S. S. Forest King. Conversion from coal burner to oil burner and general reconditioning for lumber service: S. S. Ed Cedro. Reconditioning for use as refrigerator ship: M. S. Principio. Tie rods and plates for cargo: S. S. Robert Dollar. Miscellaneous alterations and repairs: S. S. City of Los Angeles.

### NAVY YARD, PUGET SOUND, WASH.

Miscellaneous repairs: California, Mississippi, Texas, Sloat and Shirk. Miscellaneous repairs (preparation for recommissioning): Seattle. Miscellaneous repairs incident to operation as district craft: U. S. S. Sotoyomo, Mahopac, Tatnuck, Iroquois, Pawtucket. Care and preservation (out of commission): Oregon, Missoula, Charlotte.

### TODD DRY DOCKS, INC., SEATTLE, WASH.

Dock, clean and paint: Barge No. 30, Drummond Lighterage Company, S. S. Santa Cruz, Catherine D., Norwood, Redwood, Pedro Christopherson, Eldridge. Miscellaneous repairs: S. S. Ixion, Gleaner, Santa Malta, City of Bremerton, Indianapolis, Kitsap II, Comanche, G. B. Contra Costa, Depere, tug Richard Holyoke. Furnish fuel oil burning parts: S. S. President Pierce. Hull repairs: S. S. Queen. Steering gear repairs: S. S. Kaga Maru. Donkey engine repairs: S. S. Thistle. Temporary damage repairs: S. S. Nika.

### THE WINSLOW MARINE RAILWAY & SHIPBUILDING CO., SEATTLE, WASH.

Drydocking, cleaning and painting: Barge Granco (also rudder, windlass and boiler repairs), S. S. Griffdu (also overhauling main and auxiliary machinery), bktn. Russell Haviside (also miscellaneous repairs), S. S. Yosemite (also miscellaneous repairs), L. H. T. Swiftsure (also general overhauling).

### YARROWS LTD., VICTORIA, B. C.

Drydocking, cleaning, painting: Tanker El Lobo (also rudder and sundry repairs), S. S. Princess Victoria (also tailshaft repairs), S. S. Margaret Coughlan (also sundry repairs to rudder), S. S. Sheafmead (also sundry repairs), S. S. Quadra. Boiler repairs: Tugs Olive M and Mystery (also new fire bars). Extensive repairs due to stranding, also renewed large number of plates in bottom and general repairs: S. S. Gray. Welding: Cableship Restorer. Manganese bronze propeller blades: S. S. Venture. Fitting C. I. ash ejector: S. S. Princess Royal. Miscellaneous: S. S. Taketoyo Maru (new piston rings), C. G. S. Estevan (new bridgewall bearer plates), S. S. Salvor (new smokestack). Also several scows docked for cleaning, painting and calking.

## Trade Briefs

Ford & Geirrine announce the removal of their offices from 720-722 Merchants Exchange Building, San Francisco, to 326-327 Exchange Block, 369 Pine Street, San Francisco.

* * *

The Lamson Company announces that its offices and manufacturing divisions, now in Boston and Lowell, Massachusetts, will be consolidated in its new plant at Syracuse, New York.

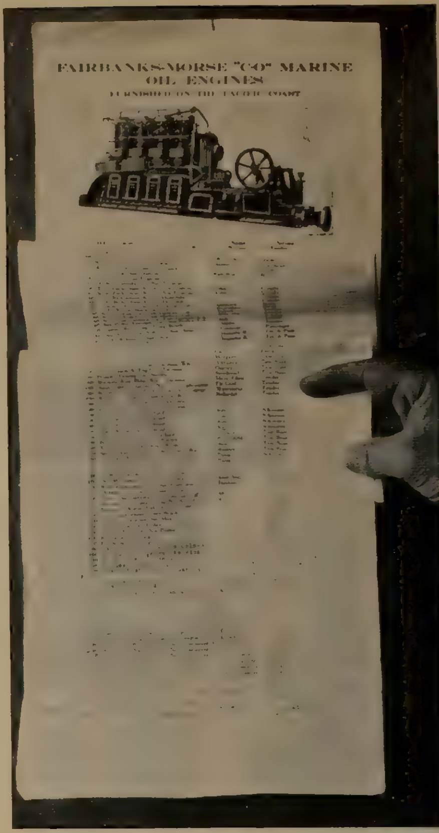
* * *

The annual sales convention of the Kerr Turbine Company was held at its plant, Wellsville, New York, on September 11, 12 and 13. Renewed business activity was reported from all sections.

* * *

The Bridgeport Brass Company of Bridgeport, Connecticut, announces the opening of a Detroit office in the General Motors Building, with Frank H. Longyear as district manager.

* * *


FAIRBANKS-MORSE "C-O" MARINE OIL ENGINES

FURNISHED ON THE PACIFIC COAST

More than 250 installations of C-O oil engines have been made on the Pacific Coast by Fairbanks, Morse & Company. The engraving shows part of the long list. The engines installed are giving satisfaction and prospects for additional business are good.

Bulletin 8-G of the Schutte & Koerting Company describes the new Schutte regrinding swing gate valve, which is a straightway closing valve designed for steam pressures up to 300 pounds a square inch and temperatures up to 750° F.

The valve has many advantages. It offers no obstruction to the steam flow or change of direction. For this reason the pressure drop in the valve is a minimum, and higher effective working pressures and higher rates of steam flow can be utilized. Piping of smaller size can be used, thereby reducing the original cost of the piping installation, and the loss of heat by radiation from the pipe surface. Ease of valve operation is secured in consequence of a special toggle lever movement.

One of the outstanding features of the valve is that the valve disc is readily accessible for regrinding purposes without dismounting the valve.

# SHIPPING BRIEFS

Announcement is made that the McCormick Steamship Company, branch of the McCormick Lumber Company, will hereafter operate independently. Articles of incorporation have been granted to the Charles R. McCormick Steamship Company. The incorporators are Charles S. McCormick, S. M. Hauptman, James S. Brown, Ira S. Lillick and J. A. Olson.

* * *

Moore & McCormack Company, Inc., of New York have entered the United States intercoastal trade. Struthers & Barry of San Francisco have been appointed general agents for the Pacific Coast and Walker-Ross, Inc., of Seattle, Puget Sound agent.

* * *

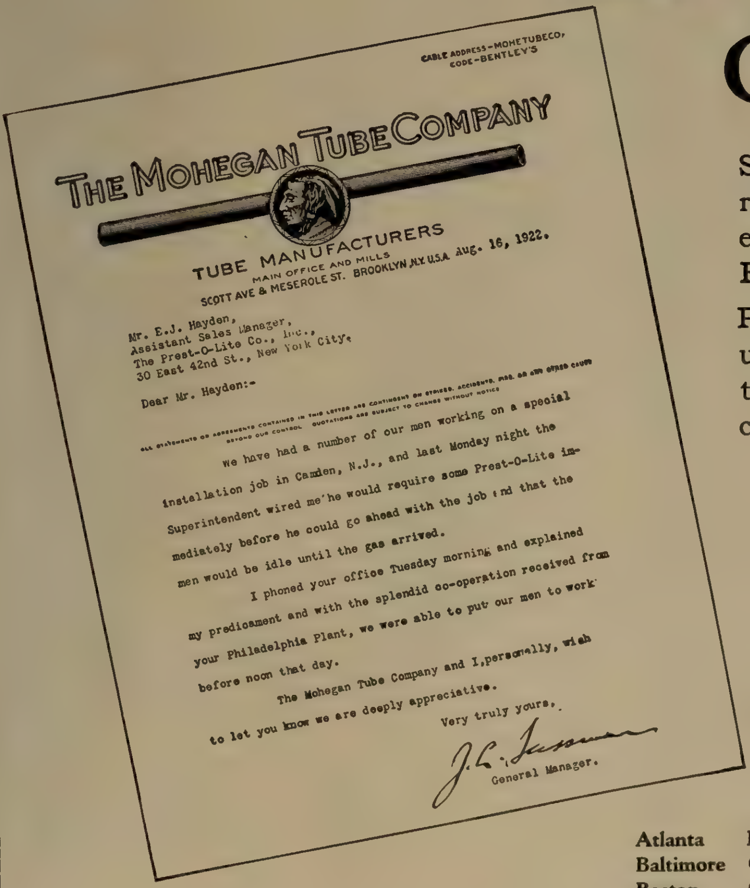
The Associated Oil Company has purchased the Shipping Board tank steamer Kewanee and will use the vessel in the coastwise trade in conjunction with four other tankers in the Associated fleet.

* * *

The Shell Company of California has applied to the Los Angeles Board of Harbor Commissioners for a thirty-year lease of five acres of land on Mormon Island which will connect with the refining plant of the company north of Wilmington. The Shell Company plans to spend about $1,000,000 in developing the Mormon Island property. It is reported that the Ventura, Associated and Pan-American oil companies who are in the vicinity of the port are also planning to spend approximately the same amount in improvements.

* * *

The Alaska Steamship Company has purchased the steamship Medon from the United States Shipping Board and will use her as an additional vessel for transporting ore from the copper mining centers of southwestern Alaska.


CABLE ADDRESS-MOHETUBECO,
CODE-BENTLEY'S

THE MOHEGAN TUBE COMPANY

TUBE MANUFACTURERS
MAIN OFFICE AND MILLS
SCOTT AVE & MESEROLE ST. BROOKLYN N.Y. U.S.A. Aug. 16, 1922.

Mr. E.J. Hayden,
Assistant Sales Manager,
The Prest-O-Lite Co., Inc.,
30 East 42nd St., New York City.

Dear Mr. Hayden:-

ALL STATEMENTS OR AGREEMENTS CONTAINED IN THIS LETTER ARE CONTINGENT ON STRIKES, ACCIDENTS, FIRE, OR ANY OTHER CAUSE BEYOND OUR CONTROL. QUOTATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE

We have had a number of our men working on a special installation job in Camden, N.J., and last Monday night the Superintendent wired me he would require some Prest-O-Lite immediately before he could go ahead with the job and that the men would be idle until the gas arrived.

I phoned your office Tuesday morning and explained my predicament and with the splendid co-operation received from your Philadelphia Plant, we were able to put our men to work before noon that day.

The Mohegan Tube Company and I, personally, wish to let you know we are deeply appreciative.

Very truly yours,

General Manager.

# Cutting Costs

Service which meets emergencies reduces cost. Idle time of men and equipment is cut to a minimum. Frequently there is no interruption.

Prest-O-Lite's service can be relied upon at all times. That is why thousands of users throughout the country depend on Prest-O-Lite.

*Each Prest-O-Lite user looks to his nearest District Sales Office, not merely for arrangements to adequately cover acetylene needs, but for helpful co-operation and advice on any matter involved in the use of acetylene.*

**Prest-O-Lite**

DISSOLVED ACETYLENE

DISTRICT SALES OFFICES

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THE PREST-O-LITE COMPANY, INC.
*General Offices: Carbide and Carbon Building, 30 East 42nd Street, New York*
*Balfour Building, San Francisco; In Canada: Prest-O-Lite Company of Canada, Limited, Toronto*

# THE CHARTER MARKETS

## Beyfuss Freight Report

San Francisco, October 17, 1922.

Our September report was dated the 11th of last month, since when

Grain to Europe has shown a decided change, particularly in the cargo being shipped by regular liners, the movement having been rapidly upward until about a week ago, when 35/— was freely done and 37/6 was being asked. Today rates are quotable at 35/-, and the flurry spoken of above seems to have passed. The full cargo business followed about the same trend; 31/9 and 32/6 was done for several steamers and the movement was rapidly upward until our latest information is that 35/6 has been paid, and in all slightly over half a dozen steamers were taken, practically all for Northern loading.

Lumber to the Orient: This trade has been unusually inactive. Parcels are of course going forward in the berthed steamers but the market shows no activity and only two full cargoes are reported with the rates quotable at about $10.50@$11.

Lumber to Australia: Two or three steamers have again been chartered for this destination and this trade also shows a lack of activity and no change in the rates that we quoted last month, namely $13. Besides the steamers there have been three large sailing vessels chartered and the rates, we are told, follow very closely those quoted for the steamer fixtures.

Lumber to West Coast South America: Rates on the regular steamers in this trade are still holding firmly at an $18 basis, but a local owned motorship is reported as taking a cargo for owners' account at somewhat under this figure. Otherwise this market shows the same dullness our other markets do.

Nitrate: The motorship just spoken of as fixed for lumber is reported at $7 a ton for nitrate to Hawaiian Islands. Also a schooner and a small steel steamer at about the same rate.

Lumber to U. S. Atlantic: Two foreign steamers have been taken from British Columbia to New York and the rates are given in the neighforhood of $13.25 per M.

C. BEYFUSS CO.,
BROKERS.

* * *

## Page Freight Report

October 17, 1922.

At the time of our last report, which was dated September 11, rates of freight on parcels of wheat and barley from San Francisco to the U. K. and Continent touched as low a mark as 27/6. Since this time, rates have taken an upward turn, and while no barley has been reported as fixed at over 35/-, parcels in bulk wheat from Vancouver at a rate of 36/3 have been done, and while full cargo fixtures have been rumored as taken at 36/3, we have been unable to find anything authentic in these reports, and the highest rates that we know to have been actually established are 35/-, both in wheat from the North and barley from San Francisco. In the early part of September Gray, Rosenbaum & Company took the British steamer Great City for wheat at 31/3, as also the British steamer Benvorlich and the Japanese steamer Karachi Maru, both presumably at the same rate. Kerr, Gifford & Company have taken the British steamer Sheafmead, no rate being given, as also the British steamer Benroech at 31/3, and the British steamers Baron Cawdor and Benmohr are both reported as having been taken for wheat at 31/3 by Balfour, Guthrie & Company. Other steamers taken for wheat are the British steamer Baron Ogilvy at 32/6, British steamers Paris City at 35/- and York City at 35/-, and the Japanese steamer Meiwa Maru at the same rate, the latter having been taken by Strauss & Company.

In lumber fixtures from the North Pacific to Australian ports, we wish to report as follows: the British steamer Skipsea at $13 a thousand feet, and the Norwegian steamer Talabot, private terms, both taken for three ports Newcastle/Port Pirie range, by J. J. Moore & Company; and the same charterers have also taken for the same business the schooners K. V. Kruse, Oregon Pine and Oregon Fir at $11.50, but discharge to be only at one port in the above range. The schooner Lottie Bennett was also taken by the same charterers for Wanganui, private terms.

For lumber for Japan, the Japanese steamers Havre Maru and Kureha Maru are reported as having been done by the Robert Dollar Company at $11 a thousand feet, and the Norwegian steamer Erle has been taken by Dant & Russell for discharge at Nagoya, but the rate on this fixture is not reported.

The motorship Challamba has been fixed for owners' account to take lumber to four ports on the West Coast of South America, namely, Callao, Antofagasta, Valparaiso and San Antonio, terms private.

The steamer Margaret Coughlan is chartered to take lumber by Balfour, Guthrie & Company from British Columbia to Montreal at a rate of $15 a thousand feet; and the American steamer Mundelta has been fixed by Burton, Beebe & Company to load from Puget Sound to North of Hatteras at $12.75; and the the British steamer Indian City has been taken for the same business by the South Alberta Lumber Company at a rate of $13.50 and the Italian steamer Brenta for the same business at $13.25. Charterers are not given on this last named fixture. A Japanese steamer for the same business was also taken at $13.

The Norwegian ship Bellhouse has been chartered by Andrew Weir & Company to load coal from Newcastle, N. S. W., to a nitrate port at 17/6. The Swedish steamer Roxen has been taken by James Rolph & Company for coal from Newcastle to San Francisco or Honolulu, terms private. The motorship Challamba, belonging to the Pacific Freighters, after discharging her lumber cargo will load nitrate from Chile to Honolulu at a rate of $7 a ton, charterers being W. R. Grace & Company. The schooner Fearless will load for the same business at the same rate, for Balfour, Guthrie & Company, and the steamer Arcadia, which is one of the steamers recently bought by W. L. Comyn and his associates, will load 4000 tons of nitrate for Honolulu at $7 for account of Balfour, Guthrie & Company, and the remaining 1500 tons of space will be used for bringing nitrate on to this coast for the Duponts. This steamer is now in New York and will probably take part cargo coal to South America, after which she will enter into her nitrate charter.

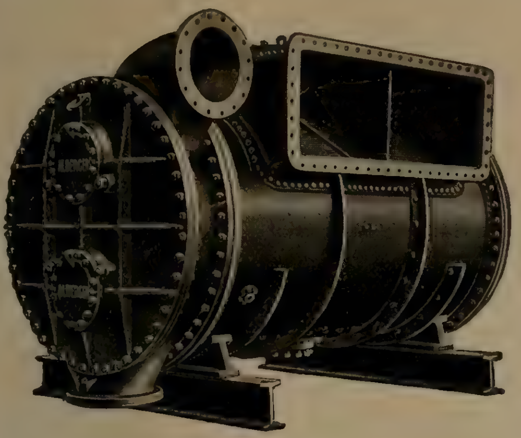
The British steamer Baychimo will load redwood lumber for account of Amsinck & Company for delivery at Belfast, terms private.

The wooden steamer Nikka has been bought by the Everett Packing Company at the United States marshall's sale for a reported price of $52,000.

Two full steamer cargoes have been taken for lumber for South African ports, one to load at the British Columbia Mills, Timber & Trading Company's mills at Vancouver, for two ports Capetown/Delagoa Bay range, and the other from Puget Sound to Durban and Capetown, the latter having been taken by the East Asiatic Company, the freight rate on these fixtures being $19. Both of these steamers are Japanese.

PAGE BROTHERS, Brokers.

# Surface Condensers



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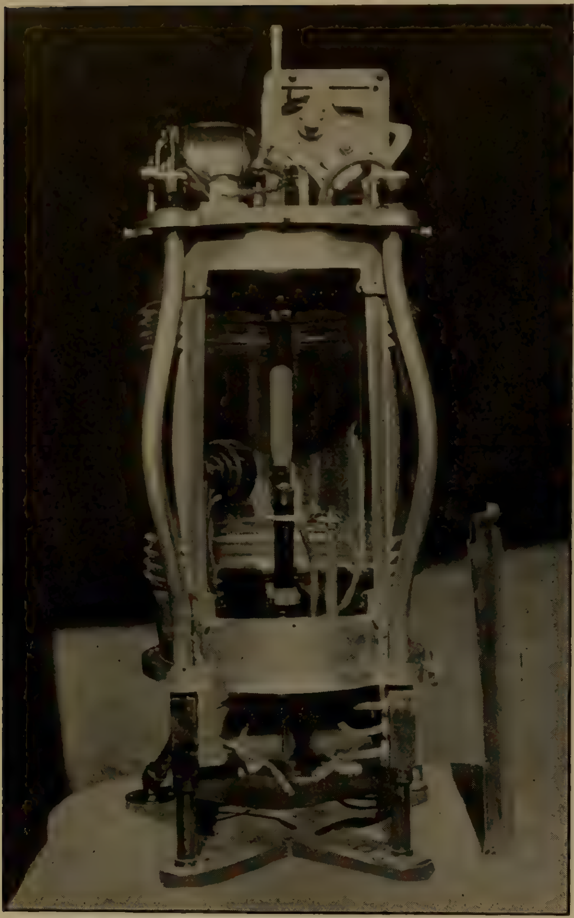
# THE DOUGLAS FOG LIGHT



The Douglas Fog Signal

NUMEROUS recent disasters due to fog in ocean transportation generally and particularly on the Pacific Coast have concentrated the efforts of many inventors on means for their prevention. Among other devices that have been brought forward the Douglas fog light gives promise of overcoming the fog menace.

This light is an electric arc of high intensity arranged with a mechanism suitable for giving an intense blue white flash at intervals of from two to twenty seconds, the time that has been found most suitable for vessels being five seconds. The flashes have 25,000 candle power at the light and the lamp is arranged with compound lens that greatly intensifies this power.

The lamp can be placed on the masthead, pilot house or platform on the forecastle and in any case arranged for control from the pilot house. The dimensions of the lamp are 16x36 inches, including the large lens. Power is derived from the ship's dynamo, the lamp being arranged for 110 volts and taking 100 amperes. On the five-second interval between flashes the average power consumption of the lamp is one kilowatt an hour and the electrodes consume one-eighth inch an hour at a cost of one and one-half cents an inch. The lamp may be operated on direct or alternating current, but more efficiency is claimed for direct current.

The Douglas fog light has passed through the experimental stage. It has had several tests on San Francisco Bay and has proved itself superior to any other known method of penetrating fog with a beam of light, giving good indication of position from 500 to 1000 feet further than any of the lights used in navigation. It has been used with considerable success in daylight, showing from 200 to 500 feet beyond the pier in dense fogs.

In a test made by the hydrographic office of the United States Navy in crossing San Francisco Bay the Douglas fog light could be distinguished for 59 seconds after all other lights on the pier had disappeared in the fog. This is equivalent to a distance of 1000 feet off the pier head.

The light has been adopted by the Board of State Harbor Commissioners, by the San Francisco-Oakland Terminal Railways and has received the endorsement of all the principal pilots on San Francisco Bay. It has also been before the United States supervising inspectors of steamboats, who have given permission for its use as an approved appliance on steamers. The light can be seen in operation on any foggy day at the pier heads outside the Ferry Building, San Francisco.

The Douglas lamp is being manufactured and distributed by the Herzog Electric & Engineering Company, San Francisco.

---

## CONVERSION JOB IN PROSPECT

The Shipping Board has sold the steamship Lake Sunapee, a freighter of 2922 deadweight tons, 2009 gross, to W. J. Gray, Jr., of San Francisco. She is to be converted to diesel propulsion.

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# ABOUT PEOPLE

**Thomas C. Plant**, traffic manager at San Francisco for McCormick, McPherson & Lapham, and former assistant director of operations for the Shipping Board, has been transferred to the company's offices at Los Angeles.

**Captain H. L. Jones** has been appointed master of the President Pierce, the newly acquired liner of the Pacific Mail Steamship Company, which will sail on the Oriental-San Francisco run. **A. C. Paulsen**, who brought the vessel to the Pacific Coast from New York, is going to New York to become traveling superintendent of the Pacific Mail fleet.

**Richard F. Sheridan** has been appointed contracting freight agent, representing the Blue Funnel Line and the Canadian Government Merchant Marine, Ltd. The appointment was made by Dodwell & Co., Ltd., general agents in San Francisco for the two companies.

**Thomas Ashman**, formerly with the Toyo Kisen Kaisha, has been appointed traveling port steward for the Admiral Line with headquarters in San Francisco.

**Pell W. Foster, Jr.**, has been appointed New England district manager of the Power Specialty Company, with offices at 50 Congress street, Boston. Mr. Foster was formerly in the New York sales office of the company.

**Captain John F. Blain** has been appointed Northwest representative of the Bethlehem Shipbuilding Corporation and allied interests.

**M. E. Donnelly**, former San Francisco representative of the Los Angeles Shipbuilding & Drydock Corporation, and **J. T. Magill** have been appointed agents for the U. S. Elaterite Products Company, paint manufacturer, and have opened offices in the American National Bank building, San Francisco.

**F. W. Leahy** has resigned the management of the marine department of the Diamond Power Specialty Corporation to establish his own business, The Leahy Engineering Company, with offices in the Second National Bank building, Cincinnati. The new company is specializing in power plant equipment as well as several lines of marine specialties for the river boats. Mr. Leahy is a native of San Francisco, and a former Pacific Coast engineer.

**G. R. Theiring**, Portland manager for A. M. Gillespie, Inc., heads the newly formed Portland Steamship Operators' Association. **John C. Settle**, in charge of the General Steamship Corporation in Oregon, has been chosen vice-chairman, and the two officers, with **F. N. Bush** of Sudden & Christenson and **Major V. A. Cartwright**, steamship agent and broker, make up the board of directors. **W. P. Bowlin** of A. M. Gillespie, Inc., is secretary.

**Lynn W. Nones** has been appointed Eastern manager of the marine department of the Diamond Power Specialty Corporation, with offices at 90 West street, New York City. Mr. Nones was formerly manager of the marine department of the Griscom-Russell Company and previous to this connection was with the Worthington Pump & Machinery Corporation.

**Berge, Frank & Keller, Inc.**, is the title of a new importing and exporting corporation with offices at 260 California street, San Francisco. The members, E. Berge, J. S. H. Frank and F. C. Keller, have had experience in Oriental trade.

**David Sarnoff**, formerly general manager, has been elected vice-president and general manager of the Radio Corporation of America. Mr. Sarnoff has been associated with the Radio Corporation of America since its organization and is considered one of the foremost workers of the radio industry. He is probably one of America's youngest executives, being only thirty-two years old. **William Brown**, another member of the corporation, was elected to the office of vice-president and general attorney.

**Rear Admiral D. W. Taylor** has been engaged by the American Ship & Commerce Corporation as consulting expert in matters of ship design, construction and operating economies. He was chief constructor of the United States Navy and chief of the bureau of construction and repair up to the time of his retirement from the Navy last July. Rear Admiral Taylor is the author of a number of books on naval subjects and is recognized as the highest international authority on steam power and ship propulsion. He was awarded the gold medal of the British Institute of Naval Architects for the best original paper on ship-shaped stream forms, being the first American so honored.

**Captain P. E. MacDonald** has been elected vice-president and general manager of the Oregon Stevedoring Company, succeeding **James V. Mason**, former vice-president. No other change of officers was made at the annual meeting of the company. It was announced, however, that the interest held by San Francisco capital in the company had been acquired by Portlanders and is controlled by Captain MacDonald.

**Lee F. Root** has retired as traffic manager of the Shipping Board's operating division in Seattle and will join the Admiral Line as assistant foreign freight agent.

Restoration of the license of **Capt. A. R. Pearson**, pilot of the American-Hawaiian steamship Iowan, which had been suspended for three years, has just been announced by Captain John K. Bulger, supervising inspector of the district. The license of Capt. Edward Sullivan, pilot of the British steamship Welsh Prince, has been revoked. The Welsh Prince was sunk in collision with the Iowan.

**C. E. Hyde** has been placed in charge of a marine service bureau instituted by the marine department of the Fireman's Fund Insurance Company. This bureau is to act in an advisory capacity to the clients of the Fireman's Fund on problems of transportation, customs and credits, and to assist generally in promoting and developing business moving by water routes.

**C. N. Wonacott** has resigned as vice-president and secretary of the Atlantic, Gulf & West Indies Steamship Company, New York City, to become vice-president of the Multnomah Lumber & Box Company of Portland, Oregon. J. G. Gredler will succeed Mr. Wonacott as secretary of the Atlantic Gulf Company.

The Wade Shipping Company of Los Angeles will hereafter be known as the T. J. Wade Company with offices in the Pacific Electric building, Los Angeles.

## DORAN AGENT IN CALIFORNIA

THE Doran Brass Foundry Company of Seattle and Brooklyn, manufacturer of manganese bronze propeller wheels and blades, has appointed George E. Swett, Rialto building, San Francisco, district sales agent for California. The Doran Company specializes in the manufacture of bronze propellers and is particularly fitted for prompt and efficient service from either of its two plants. Mr. Swett, who has a wide acquaintance among engineering and shipping interests, will continue his representation of the Allan Cunningham Company, builder of the Cunningham electric cargo winch and other electric and steam marine auxiliary machinery, Carlisle & Finch searchlights and a number of other lines devoted to the marine trade.

# RAND SYSTEM FOR HANDLING BUNKER OIL FROM STORAGE

## Low Gravity Fuels Heated by Jets of Hot Oil Injected from Discharge Nozzles Revolving in Horizontal Plane, Thus Agitating Entire Mass

FUEL oil now being used for the operation of steamships is generally specified to range from 16 to 14 degrees Baume. The minimum would probably be much lower were it possible to move heavier oil freely from storage after placing in the inner-bottom tanks, where the cooling effect of the sea-water causes the oil to congeal and become a semi-solid mass. In spite of this condition, ship operators are at times compelled to use low-grade oils containing considerable asphalt and having a gravity down to 11 degrees Baume, and a comparatively high cold test.

That the seriousness of the situation must be reckoned with in present and future ship equipment to assure positive pumping and unimpaired fuel delivery to the boilers is becoming more evident every day. It is not uncommon for ship operators, realizing the difficulties of reliquidizing low-grade oils, to insist upon oil of 16 degrees Baume because their ships cannot handle oils of lower gravity. However, even high-gravity oils sometimes become difficult to move in the colder weather or sea-water temperatures.

### Methods of Treatment

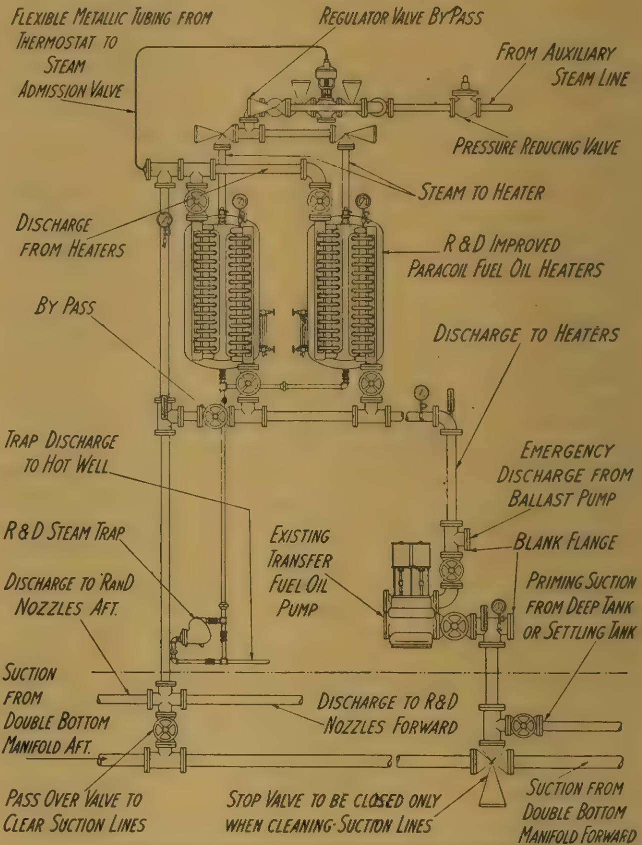
With the increasing difficulty of obtaining high-grade oils, methods have been sought and in many places their employment compelled to render the congealed oil mobile again so that it will flow and pump freely from all points.

A system of fuel oil treatment that affords a practical means of handling the lower grades of fuel oil and that has come into prominence recently through the prevalence of these poorer grades of oil is known as the "RanD System of Handling Bunker Oil." This system, which is now operating successfully on many ships, is said by the manufacturers to reduce cost of upkeep and costly delays by avoiding the use of steam heating coils in the inner-bottom tanks.

Circulation in the RanD System reaches every point of the tank by forcing a jet of heated oil into the mass of cold oil. The jet of hot oil comes from a discharge nozzle so constructed that it revolves slowly in a horizontal plane, thereby causing agitation in every direction throughout the tank compartment. The nozzles are installed through an opening cut in the tank top and the nozzle in each compartment is provided with a valve on top of the tank. The location and number of nozzles is a matter of special engineering for each installation.

### Oil Circulation

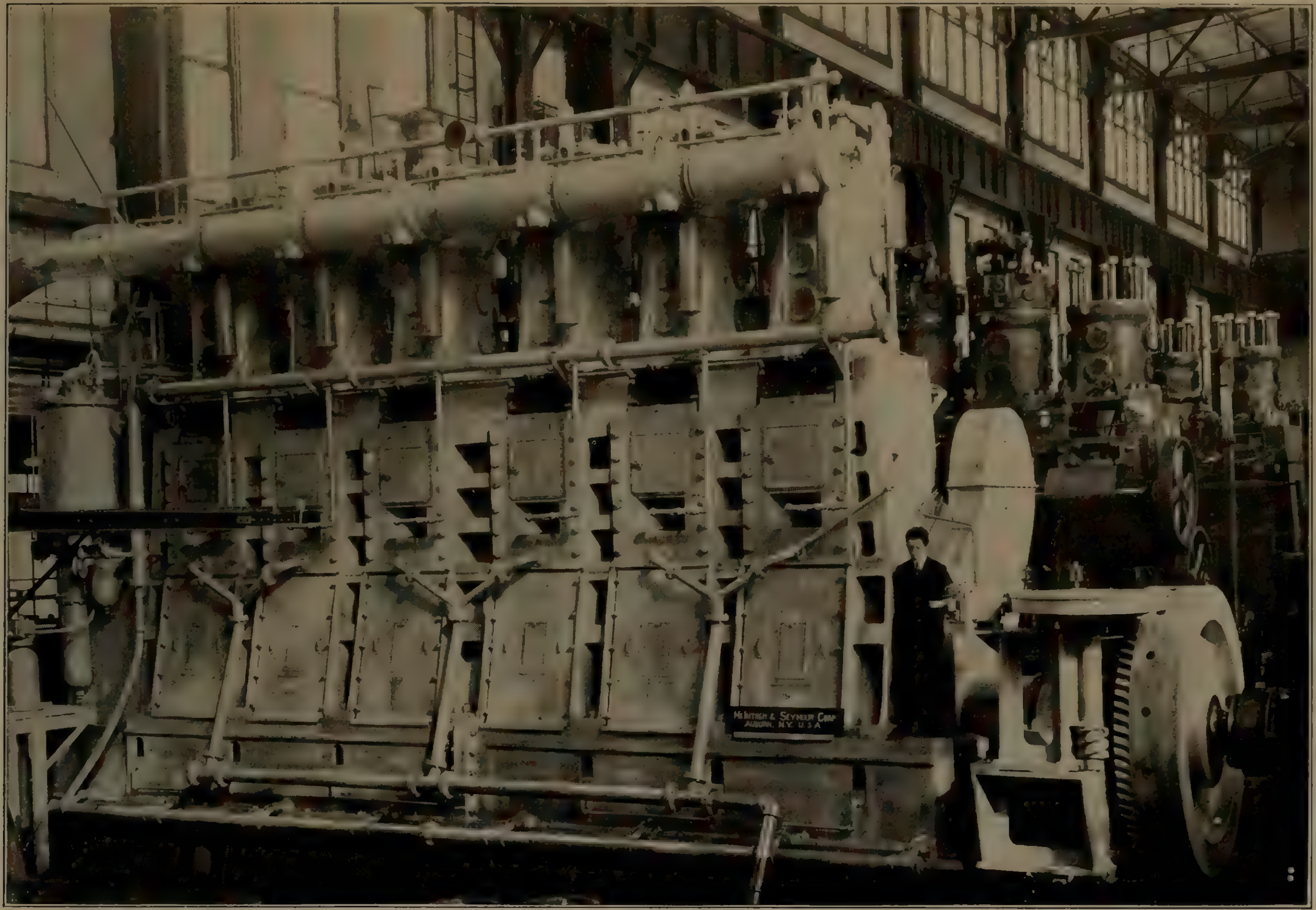
The supply of hot oil comes from a central heater located in the boiler or engine room, with connection to a circulating pump, which in ships already built is usually the existing transfer pump. The suction from the tank in vessels previously in service is connected to existing lines, and an auxiliary priming suction is taken from the deep tank or daily supply or settling tank. If the vessel is not fitted with a supply or settling tank, a specially designed bulkhead connection is fitted with frames and covers, to which is attached a heating coil with outside joints and auxiliary suction valve to the deep tank. This forms an auxiliary for temporary use after the vessel has been laying at its docks and the entire mass of oil in the deep tank has become congealed. The discharge from the circulating pump is led to the central heater, where the oil is heated by exhaust or live steam, and then goes to a main discharge pipe with distributing branches leading to the discharge nozzles of each tank compartment.


FLEXIBLE METALLIC TUBING FROM THERMOSTAT TO STEAM ADMISSION VALVE
REGULATOR VALVE BY-PASS
FROM AUXILIARY STEAM LINE
PRESSURE REDUCING VALVE
STEAM TO HEATER
DISCHARGE FROM HEATERS
R & D IMPROVED PARACOIL FUEL OIL HEATERS
BY PASS
DISCHARGE TO HEATERS
TRAP DISCHARGE TO HOT WELL
EMERGENCY DISCHARGE FROM BALLAST PUMP
R & D STEAM TRAP
EXISTING TRANSFER FUEL OIL PUMP
BLANK FLANGE
DISCHARGE TO RAND NOZZLES AFT.
PRIMING SUCTION FROM DEEP TANK OR SETTLING TANK
SUCTION FROM DOUBLE BOTTOM MANIFOLD AFT.
DISCHARGE TO R&D NOZZLES FORWARD
PASS OVER VALVE TO CLEAR SUCTION LINES
STOP VALVE TO BE CLOSED ONLY WHEN CLEANING SUCTION LINES
SUCTION FROM DOUBLE BOTTOM MANIFOLD FORWARD

Typical Piping Diagram. R and D System for Handling Bunker Oil

A branch also leads to the deep tank where it is connected and fitted with a nozzle similar to that in the inner-bottom tanks. The provision is made as an auxiliary for starting the system. After operation for a short time, the discharge to the deep tank is shut off and the discharge valve near the suction to the first tank or compartment that is to be emptied or treated is opened. After closing the suction to the deep tank, the suction from the first tank is opened and the circulation started. The discharge valve in the opposite end of the tank is then opened and the first discharge closed, or, if necessary, both valves can be opened at the same time. The first method is resorted to if the oil has become solid. The air space formed between the oil level and the top of the tank, due to contraction of the oil on cooling, can be flooded by means of the discharge nozzle at the opposite end of the tank. So effective is this circulation that an inner-bottom tank 90 feet long has been handled with two discharge nozzles, one at each end of the tank. A branch line permits discharge of part of circulating oil to settling tank, as required for service.

The RanD System is manufactured in the United States by Row & Davis, Engineers, Inc., 90 West street, New York.



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# THE GOOD OLD DAYS

By SEA FLAME

AWAY back in the early '80's the writer was employed as engineer on a Chinese steamer plying on the Yangstze. The motive power was a single inclined cylinder low-pressure engine, built by the Novelty Iron Works in 1858. At that time her boilers were twenty-six years old. They were of the return flue type, with "steam chimneys." A maximum pressure of 18 pounds was allowed, and much of the time we carried less. Of course, the condenser was of the "jet" type, as we were always in fresh water. The crew were all Chinese, and the old Dragon Flag flew at our staff, as the boat was owned by a Chinese company, of which Li Hung Chang was principal stockholder and director.

Our run was from the river port of Hankow to the farther up-river port of Ichang. We made many stops on the runs at almost every city of consequence on the way, and carried vast numbers of passengers and valuable freights. The steamer was of iron, built in Great Britain and assembled in Shanghai; the engines, as I said, were of Yankee make. I may be an inch or two out, but I believe the cylinder was 62 inches in diameter with a stroke of 9 feet. The air pump feed and bilge pumps worked off the cross-head by a system of levers. She had what was then known as a "floating top." This was nothing more nor less than a head valve made of wood, which "floated" on the top of the air pump, whose barrel was enlarged several inches at the top end. The discharge was a trough, which went out overboard into the wake of the port paddle wheel. Top of air pump was about three feet above deep load line, and as we were always in smooth water, all went well.

Our fuel was Takasima coal when we could get it. This was a very good coal, though fine, and we could get a horsepower on about four pounds an hour. However, remember, we did not have to use salt feed and "blow" like the old-time seagoing boats did. Sometimes we could not get Japanese coal, and had to use native stuff. It was then the fuel rate went up, for the ash would run as high as 30 per cent with a corresponding increase in fuel.

### No Saving of Life

The engine was fitted with a "Sickles cut-off," by which the steam valves dropped at any point determined on. They had "dash-pots," which took up the shock of seating, and it was quite a nice job so to adjust pet-cocks, etc., that the valves would seat without jar. In maneuvering it was first necessary to throw out the cut-off gear, then watch her and throw out the steam hook, followed by the exhaust hook, ship the hand bar, close down on the jet injection and stand by for bells. When we got four bells and a jingle the man on watch had to move quick. And we often had them, for it seemed to be a part of the river junkmen's creed to try and be run down by the "devil boat." Sometimes in spite of all the pilot house or engine room men could do, we would slice through a big wooden junk. No attempt was ever made to save anyone from the sunken craft, for the Chinese at that time had a custom which made it imperative on the saver of life to keep the savee for always, without work or effort on the latter's part. Therefore, after we had done all we could to prevent a collision, and it happened in spite of all our efforts, we would "hook on" again and paddle away.

The boat's paddle wheels were large for the engine, and at full speed, with cut-off all out, 16 revolutions a minute was about the average going up river. Coming down, we would set cut-off to drop at six inches of the stroke, and her turns were about two a minute, or just enough to make her steer, and the current did the rest. The card at this position was certainly a good one, looking a great deal like a Corliss card, with engine running light.

### Emergency Boiler Repairs

As I said before, the boilers were old. They needed considerable looking after and patching in port, but we had plenty of time. Once or twice, though, a hole blew out while steaming in the river away from the terminal or lay-over ports. Then we had to make quick and sudden repairs, as it was not safe to lay at anchor at night in the lonely river reaches, as the local pirates were very handy in trying to get things that way. One instance the writer well remembers: The No. 1 man came rushing into the engine room about 2 o'clock in the morning with the glad tidings that "hap got hole bottom side boiler." Investigation showed he was right, for a cloud of steam and cries of the firemen greeted me as way to the fire room was made. The boiler, port one, was cut out, and fires drawn. Pressure soon went down, and it was seen that a hole about an inch in area was in the bottom of the ash pit, through which the boiler was rapidly emptying itself.

We wanted to get in without delay, so a bag was filled with fine ashes and thrown over the hole. An anvil was placed on this, fires got away again, and pressure brought back to around ten pounds, boiler cut in, and we had not stopped, and continued our run through to Hankow, where we made substantial repairs. And we made them ourselves, too, for there were no shops there then. Probably some of the younger men may think this a "yarn," but it's true.

Our work on the steamer was easy, although the hours were long. The chief took only one watch, that between 8 and 12 at night. The other two kept the balance of the twenty-four. Had an oiler, and unless disturbed by bells, the hardest part of the job was keeping awake, as the old engine turned so slowly and steadily that it got monotonous.

### "Old Days Not So Bad"

We had two cast-iron floats on the paddle wheels just opposite the crank. This helped to swing her over and obviated danger of a "dead center." She also had what was then known as "dog-cranks," as the crank pin was only fast in one of the webs. In the other one it was square, and the hole in the web about two inches larger. Between the pin and the sides of the hole were fitted segments of hard wood, held in by a collar and studs. This allowed for distortion and movement when the outboard paddle wheel was low or high, depending much on the way the hull was laden, and with what.

On anchoring at terminal ports it was necessary to chain the wheels to keep the current from turning them over. While doing this one man held the engine steady with steam until all was fast. This operation had to be reversed when getting under way.

We had no steam-steering gear, electric lights or refrigeration. Wireless was unheard of, as were incandescents. No fans in rooms or other aids to comfort, but we fed well, worked hard and were happy. Had no unions to trouble us, and the firemen were absolutely under the No. 1 man, and gave no trouble. After all, the old days were not so bad. We did not have the worries we have now. Of course, the pay was not as high, but one could get a tailor-made suit for $6, with other things about the same ratio.

# Pacific Marine Review

The National Magazine of Shipping

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# Shadows of Coming Events

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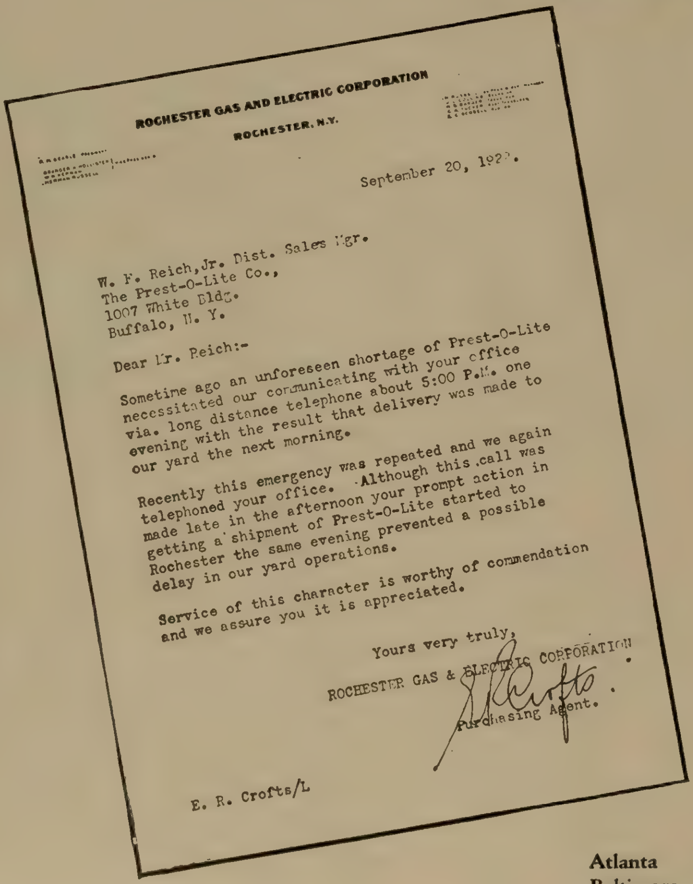

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ROCHESTER GAS & ELECTRIC CORPORATION
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# Pacific Marine Review

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J. S. HINES
Publisher

A. J. DICKIE
Editor

ANDREW FARRELL
Associate Editor

BERNARD N. De ROCHIE
Business Manager

FRANK V. LONG
Advertising Manager

PACIFIC MARINE REVIEW,
THE NATIONAL MAGAZINE OF SHIPPING
576 Sacramento Street, San Francisco

339 at No. 30 Church Street,
New York City

500 Citizens National Bank Building,
Los Angeles

Official organ of the Pacific American Steamship Association

Entered as second class mail matter June 20, 1913, at postoffice, San Francisco, under the act of March 3, 1879.

| | |
|---|---|
| Subscription price, a year (domestic) | $2.00 |
| (foreign) | 3.00 |
| Single copies | .25 |

Published on the fifteenth of each month. Advertising forms close on the tenth and editorial forms on the twelfth.

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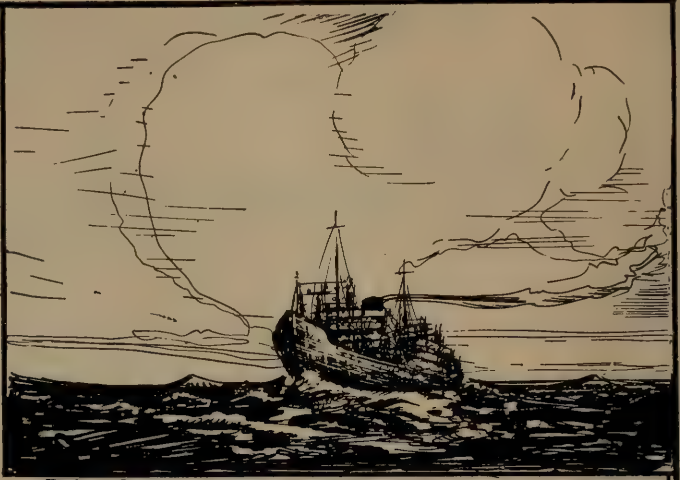
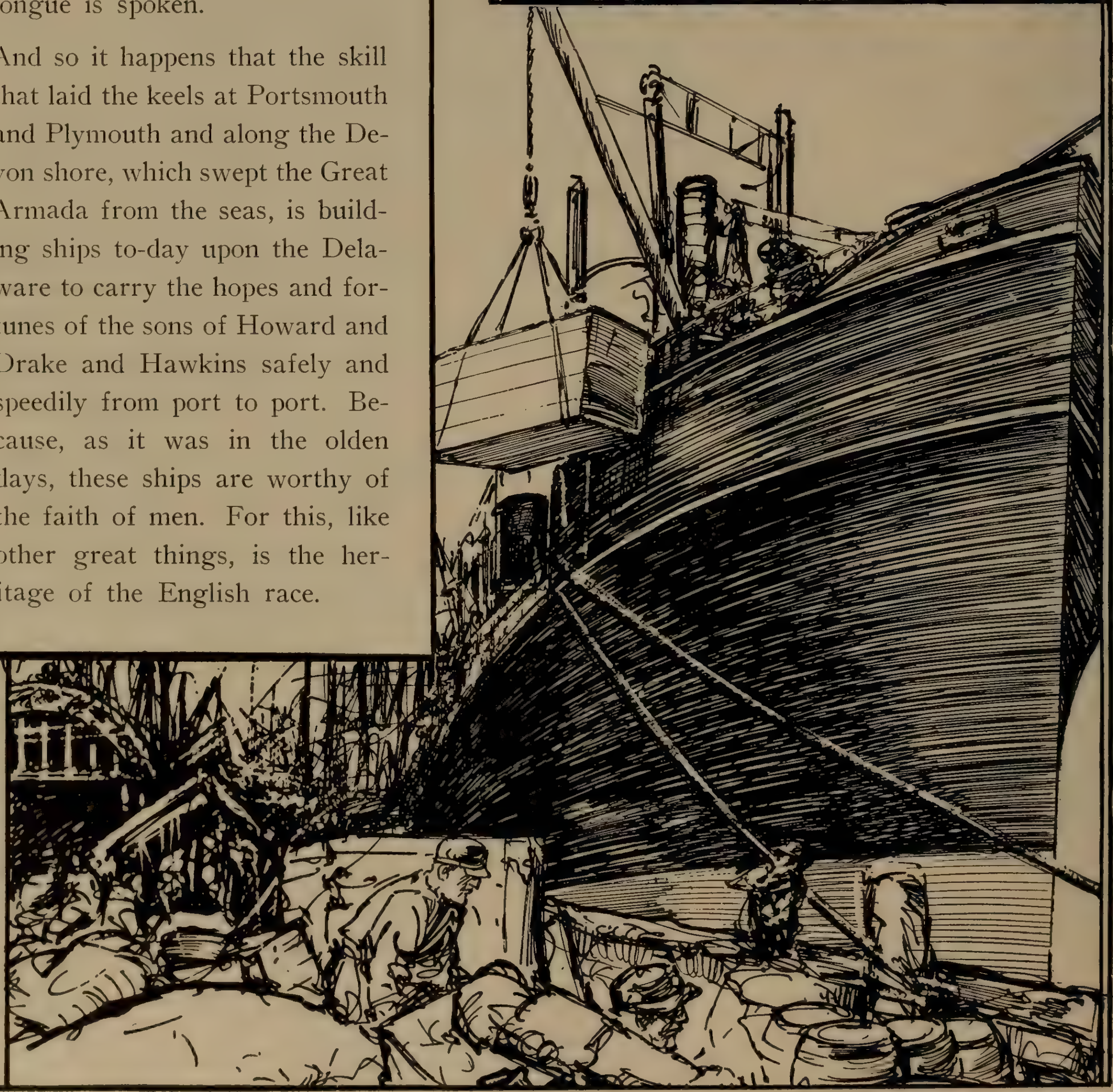
CHARACTER ▫ CRAFTSMANSHIP ▫ SERVICE

# The Heritage

FROM the days of the Vikings, devotion to the ideal of craftsmanship has been in the blood of the Anglo-Saxon race. And this devotion to high ideals and worthy achievements lives to-day wherever the English tongue is spoken.

And so it happens that the skill that laid the keels at Portsmouth and Plymouth and along the Devon shore, which swept the Great Armada from the seas, is building ships to-day upon the Delaware to carry the hopes and fortunes of the sons of Howard and Drake and Hawkins safely and speedily from port to port. Because, as it was in the olden days, these ships are worthy of the faith of men. For this, like other great things, is the heritage of the English race.





NEW YORK SHIPBUILDING CORPORATION

NEW YORK, N.Y. CAMDEN, N.J.

# Pacific Marine Review

The National Magazine of Shipping

*December, 1922*

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## The Day of the Motorship

NO recent event in the oil engine field, perhaps no single occurrence since Dr. Diesel succeeded in his experiments, has possessed so much of the important and spectacular as the decision of the Union Steamship Company of New Zealand to construct for its Vancouver-Sydney service (Canadian-Australasian Line) a passenger motorship of about 20,000 gross tons. In size alone the vessel will be far and away larger than any motorship yet built—more than twice as large in gross tonnage, in fact; she will be 600 feet long, have a beam of 72 feet, accommodations for 900 passengers in three classes, and will have the high maximum speed of about 18 knots.

To the layman, whose imagination has been captured by 56,000-ton Majestics, or who has no clear conception of the difference between displacement and gross tonnage, a vessel of 20,000 tons gross may not appear to be so large after all; but the whole maritime fraternity, from architect to operator, realize that here is a definite departure from present standards of motorship construction. The oil engine, in fact, has at length come into its own as propulsive equipment of a relatively large vessel of a relatively high speed, of a vessel two-thirds the size of the Mauretania and rivaling in size the present giant of the Pacific, the new Empress of Canada. As an English authority, the London Times, says quite confidently, "so far as naval architecture and marine engineering are concerned, the new Fairfield contract brings the first-class motor-propelled North Atlantic liner well within sight"; and it must be remembered that a "first-class North Atlantic liner" is a vessel of at least 30,000 or 35,000 gross tons.

Those who are inclined to be pessimistic regarding the results of this experiment should ponder the standing of the Union Steamship Company of New Zealand as a successful operator; of the Fairfield Shipbuilding & Engineering Company as a builder; and of the Sulzer Company of Winterthur, Switzerland, as a manufacturer of diesel engines. When three companies such as these combine in a work of this nature it may be assumed that the chances of failure are exceedingly remote.

Up to the present there has been a general tendency to regard the diesel as unsuited for large vessels because of the many cylinders required and the low efficiency of the engine in productng high power. It is quite true, however, that even in the new Union motorship these objections have been given a good deal of weight, inasmuch as the vessel will have four propellers, each driven by a separate unit, whereas the Empress of Canada, which is slightly faster and slightly larger, has only two. Even when these facts are considered, on the other hand, the new vessel is nothing less than revolutionary.

The selection of the Sulzer engine is indeed a high compliment to the Swiss manufacturers, and at the same time to the two-cycle diesel, which had lagged far behind the four-cycle design in marine installations. But it also is true that Sulzer engineers have manifested a willingness to discuss units of high power at a time when more than one manufacturer was of the belief that, regardless of what the future might bring forth, the diesel must resign itself for the present to relatively small size. This forward-looking attitude of the Sulzer firm has brought its reward, and a successful outcome of the experiment, which practically may be taken for granted, will enhance its reputation enormously. The engines will not, however, be built by the Sulzer company but will be manufactured by Fairfield under license.

While shipbuilding history is being made across the Atlantic news of considerable interest comes from Japan. The first item calmly records the intention of the Kokusai Kisen Kaisha to convert 300,000 tons of vessels (presumably deadweight) from steam to oil engines. Until excellent corroboration comes, this report will not be taken seriously. The other item, while less pretentious, has the merit of being well founded. It is that the Mitsui Bussan Kaisha will construct two motorships of 6500 tons deadweight. Thus Japan will make the motorship "unanimous," for up to this time the Island Empire has had no sea-going vessels of that class. Ever since the introduction of steam in the Far East the Japanese have clung rather tenaciously to the reciprocating engine and the Scotch boiler, the one noteworthy exception to the rule being the Toyo Kisen Kaisha, which introduced the direct-drive turbine in the Shinyo Maru and Tenyo Maru, and also led with geared-turbine and turbo-electric drive. The Mitsui action, in view of Japanese conservatism, is important out of all proportion to the actual tonnage to be constructed. Details of the vessels will be awaited with interest.

## Three New Services

THREE new services announced by the Shipping Board within the last few weeks merit more than passing mention. Swayne & Hoyt of San Francisco, who have been operating three Shipping Board freighters under the title of the Pacific-Argentine-Brazil Line, have been allotted the passenger steamships President Hayes, President Harrison and Susquehanna for the same route; the Mallory transport Lines will maintain a monthly freight and passenger service between North Atlantic and Gulf ports and South and East Africa; and the Barber Steamship Company, which has been operating government-owned cargo tonnage in the North Atlantic-Far Eastern trade, will extend its service to include Manila, with sixty-day sailings for the time being.

Two of these new or augmented services are, it should be observed, by way of the Panama Canal. They constitute another recognition of the important part played by that waterway in creating new trade routes and in destroying old. Too many American steamship operators are reluctant to face the facts, but it does appear that the Shipping Board has the imagination to see new opportunities and the energy to take advantage of them.

If there are other potential routes, not now covered by American operators, the time to occupy them is now. Events of the last two years, the expressed policy of the administration as embodied in the Subsidy Bill, the bald facts of the case, all go to prove that the United States merchant marine must be based primarily, if not exclusively, on services to and from our own ports. In other words, we have little enough hope of successfully engaging in trade between Australia and South America, Scandinavia and the Far East, and so on. If the situation is as thus outlined, it is all the more important that all promising services touching our own country be developed.

## The Situation in Japan

THE Osaka Shosen Kaisha's report for the first six months of 1922, which was submitted to the stockholders at a meeting in Osaka July 27, has been received from Japan. It is an interesting document. It shows, among other things, that although the O. S. K. was able to continue the payment of dividends at the rate of 10 per cent a year, it did so only by transferring yen 2,000,000 from its dividend reserves, with the result that those funds have depleted to yen 6,600,000, or approximately enough for the payment of 10 per cent dividends up to the end of 1923, provided, of course, that revenues do not show any marked increase. These facts explain and give point to a statement previously received from Japan to the effect that the O. S. K. directors were opposed to further depletions of reserves for the payment of dividends.

But other data of the report indicate that the O. S. K. is in a much better condition than many companies. It was able to add the following approximate percentages to its reserves: 4 per cent for insurance on the fleet; 5 per cent for repairs; 4 per cent for depreciation. On the other hand, its dividend reserve was reduced yen 2,000,000 and its fund for business extension by the same amount, so that the aggregate reserves fell a little more than yen 4,000,000. But the total still stands at yen 43,885,911.

At its general meeting in Tokyo September 29, the Toyo Kisen Kaisha declared a 5 per cent dividend by transferring yen 550,000 from reserves. Brief reports from Japan state that the company lost yen 932,535 "this year" (whether that means six months or twelve is not stated) as against a profit of yen 84,181 last year, and as a consequence decided to float a loan of yen 2,750,000. The T. K. K. also has declined, it is reported, to comply with the Japanese government's request or demand that subsidized lines reduce their freight rates in order to assist in a campaign to lower the cost of living, although the N. Y. K., O. S. K., Nitta and Nisshin lines had acceded.

While the larger lines are finding the going bad, the smaller companies appear to be doing a brisk business in their so-called "near sea" services, though whether they are making any profits is not stated. Japanese vessels under charter to Japanese increased from 350,000 gross tons in October, 1921, to 630,000 in October, 1922, while those chartered to foreigners decreased from 130,000 to 30,000.

Shipbuilders of Japan evidently are none too happy. Thousands of workmen are being dropped, some of the recent announcements being: Yokosuka navy yard, 3000 before October 20, and 3000 more before March 31; Kure arsenal, 4400 in October; besides other scattering reductions. The Mitsubishi company will close one week a month, says another report, but will grant employes 60 per cent of their regular pay during the enforced holidays.

Eventual success in shipping and shipbuilding may hinge upon one's ability to hold on grimly today. It may help Americans to know that the situation across the water is almost as bad as it is here.

## Justice for the Coast Guard

WHEN the United States Coast Guard sent two vessels 700 miles or so into the Pacific to find and, as the event proved, to destroy the hulk of the U. S. S. B. steamship City of Honolulu, each cutter had only one line officer attached to it. This brief statement of fact serves to throw into high relief the situation existing in the Coast Guard today, and it constitutes a powerful argument for the passage of H. R. 10531, which is designed to encourage young men to enter the service.

As a report of the House committee on interstate and foreign commerce makes clear, there is almost no incentive for "officer material" to enter the Coast Guard. The service is allowed one captain, who holds that rank only while acting as commandant; the ranking engineer officer, while serving as engineer in chief, has the grade of commander, and only six engineer lieutenant commanders are provided for; six line officers have the grade of commander. Of the six now holding that rank, the senior has served forty years and the junior thirty-six years. Says the report: "This is what the Coast Guard has to offer today to the young man who considers entering as a cadet in order to become an officer of the line: Three years of intensive study and rigorous discipline while under training as a cadet, a lifetime replete with hardships, dangers, separations from family, repeated changes of habitat, the discomforts incident to life at sea on board small vessels, and after thirty-six years' service the rank of commander with the certainty that he can go no higher unless, indeed, he should be the one officer selected by the President to be commandant of the service." As for engineer officers, the report goes on: "This is what the Coast Guard has to offer today to the young man who considers entering as a cadet engineer in order to become an engineer officer: He must pass a stiff examination in marine engineering and other subjects before he can be appointed a cadet engineer. He then undergoes one year of intensive study and rigorous discipline while under training as a cadet engineer. He then faces a lifetime replete with hardships, dangers, separations from family, repeated changes of habitat, and the discomforts incident to life at sea on board small vessels. His lot is harder than that of the line officer in one respect in that he can never be in command of a ship with quarters in the cabin and thereby have some degree of privacy on board the ship. After twenty-seven years of such service he may expect to attain the rank of lieutenant commander (engineering) with the certainty that he can go no higher unless, indeed, he be the one officer selected by the President to be engineer in chief of the service. With such prospects confronting them, it is now practically impossible to obtain young men of the proper caliber who are willing to become engineer officers in the Coast Guard."

The pending bill would provide the service with higher ranks. It is a just bill and should pass. The nation is alarmed at the ebbing morale of the Army and Navy. In view of the situation in the Coast Guard, it is positively surprising that the service has been maintained at all.

## A Voice From the U. K.

A RESIDENT of London comments as follows on a recent editorial of Pacific Marine Review regarding anti-American editorials in British publications:

"I could have much argument with you on the subject of quoting liverish pronouncements by a provincial paper published in Liverpool when quite a lot of us have been writing hard to preserve good feeling between the two countries in every way. We might as well quote the ——— ——— in the early days of ——— ——— instead of the P. M. R. and other carefully-written organs which are just as American but are blessed with a sense of proportion and fair play. All strength to your elbow, but do realize that the majority of English people, in the shipping world and out, are anxious to be the best of friends with America."

## To Limit Competition

AMONG the resolutions adopted by the recent Pan-Pacific Commercial Conference in Honolulu was this:

"WHEREAS, one of the most important problems facing the commercial world today is that of oversea transportation, owing to the great economic waste now existing by reason of the unnecessary duplication of steamship services, and

"WHEREAS, the costs to all commercial interests concerned are needlessly increased by reason of such wasteful duplication, and

"WHEREAS, by intelligent conservation of shipping resources, the trade of the Pacific in common with the rest of the world could be greatly enhanced; therefore

"This conference is of the opinion that the nations adjoining the Pacific should hold an international conference consisting of representatives of the shipping and trading interests of Pacific lands for the purpose of studying the question of the conservation of shipping on the Pacific Ocean, with a view if possible to reducing the serious economic waste in ocean tonnage now existing.

"To this end, this conference respectfully suggests that all the governments interested should be invited by the Pan-Pacific Union to send representatives to an international conference to be held in the near future."

The germinal idea of this resolution, it is fair to assume, came from a paper read by Captain I. N. Hibberd of San Francisco and published in the November issue of Pacific Marine Review, in which the proposal was broached that the oceans be apportioned among the nations. Heretofore all, or nearly all, suggestions looking toward an end to destructive competition have been confined to the shipowners of one nation, and necessarily failed because other countries were not brought within the scope of the plan. But an international agreement is quite different: it offers hope of success not unlike that of the Washington conference on the limitation of armaments; and it is at least possible that such an agreement is a good deal nearer than most of us realize.

## The Resolute-Reliance Transfer

THE transfer of the steamships Resolute and Reliance to the Panama flag is doubly to be regretted in that the American merchant marine not only loses two large passenger vessels, but may suffer more severely, if indirectly, through use that may be made of the incident by opponents of a subsidy. It should be said in fairness to the Shipping Board, however, that it had no power to prevent a transfer, inasmuch as the vessels were transferred from the Dutch to the American flag under agreement that re-transfer would be permitted within three years. The reasons that actuated the Atlantic Mail Corporation (United American Lines) in changing to Panama registry are set forth in a statement issued by R. H. M. Robinson:

"We keenly regret that conditions have arisen which have necessitated our arranging for the operation of the Resolute and Reliance under a foreign flag.

"Early last summer we arranged to charter the Resolute to Raymond & Whitcomb Company for a cruise around the world and the Reliance for a cruise to the West Indies and South America. Following the publication of the attorney general's opinion as to the application of the Federal prohibition law to American ships on the high seas, more than fifty passages were cancelled on the Resolute alone, which could be attributed to this ruling. The cancellations involved for the most part the more expensive accommodations.

"Because of the keen competition of cruises arranged for foreign steamers, we believe that the cruises of the Resolute and Reliance cannot be carried out successfully unless the passengers can be offered the same service and privileges as are offered on foreign ships. Therefore, in view of the large sums involved, and in fairness to our stockholders, we have completed arrangements to transfer the ships to a foreign flag. We have selected the Panama flag because we believe it to be the most acceptable to the interests of the United States.

"The financial investment in these ships and the management will remain, as in the past, wholly American. Following their cruise, the ships will resume sailings between New York and Europe, in which they will be operated by the United American Lines, in joint service with the Hamburg-American Line, as heretofore."

# THE CHINA BASIN TERMINAL

## First Combined Transit Shed and Warehouse on Pacific Coast, if not in the Entire Country, being Built by the San Francisco Harbor Board

FOR two reasons the San Francisco China Basin Terminal, the substructure of which is being built at the present time, is of unusual interest to engineers and others who have to do with harbor improvements. In the first place, the terminal will be the first combined transit shed and warehouse on the Pacific Coast of the United States, if not in the entire country; and in the second place, several novel features of construction have been adopted. When it is stated that the superstructure will be 812 feet long, from 137 to 102 feet wide and six stories high, it will be readily understood that the superstructure presented problems essentially different from those of the ordinary wharf with light one-story shed.

### Concrete Caissons and Curtain Walls

The type of construction adopted consists, to quote a paper read by Frank G. White, chief engineer of the Board of State Harbor Commissioners, before the meeting of the Pacific Coast Association of Port Authorities, "of a series of pre-cast reinforced concrete caissons, which are set approximately 15 feet apart, the openings between adjacent caissons being closed with pre-cast curved curtain walls. The caissons are 7.5 feet in thickness, 20 feet in width at right angles to the axis of the wall and from 54 feet to 57 feet in depth below the level of the dock.

"The caissons are set in holes excavated in the hardpan, upon level beds of crushed rock. After setting, 15 piles are driven in the bottom of each caisson and it is filled with concrete. The tops of the caissons are anchored to the foundations by heavy reinforced concrete ties, which extend directly across the building. The curtain walls closing the spaces between the caissons are curved so as to act as vertical arches, and the ends where they rest against the caissons are grouted so as to secure a uniform bearing. The building foundations consist of concrete footings supported on clusters of piles which are driven through the sand fill and into the underlying hardpan. The building will be of reinforced concrete throughout with floors of flat slab construction. The wharf adjoining the channel will consist of a series of arches supported by the caissons. This wharf will be 1000 feet in length and the construction will permit of dredging to a depth of 36 feet at mean lower low tide.

"The contract for the substructure includes the construction of a main seawall extending from Third Street near the northerly end of the bridge over Channel Street to Pier 46; a wing wall extending northerly to a junction with the existing sea wall between Piers 44 and 46; the filling of the area inside this sea wall; the construction of the foundation for the terminal building; and the construction of the wharf and finished lower floor over the main sea wall and extending over one-half of the width of the building."

In preparation for the work, the Board of State Harbor Commissioners removed old buildings on the site and did necessary dredging to remove soft mud. Further work on the substructure then was commenced by the Healy-Tibbitts Construction Company.

### Method of Sinking Caissons

Foundations of the building proper consist of concrete footings on clusters of piling driven through a sand fill to hardpan. Most of these clusters range in number from 23 to 28 piling each, and a total of 5400 piles will be used for this portion of the work. On the outside will be the caissons, which, as was stated, are pre-cast and are floated into position and sunk. An ingenious plan of handling these caissons consists, in brief, of building a concrete bulkhead on what shall be the lower end and of supplementing this on the opposite or upper end with a wooden bulkhead. With this work done the caissons are launched and towed to the site of the work. As may be expected, they do not, of course, float on an even keel because of the greater weight of the concrete bulkhead. By the introduction of water, combined with the lift of a derrick, the caissons are sunk into prepared excavations, the bottom of which have been smoothed with crushed stone by a driver. When a caisson has been plumbed and permitted to stand so that settling, if any occurs, has taken place, and has been re-plumbed until it shows no more than a deviation of 1½ inches, rock is dumped on the outside, the concrete bulkhead is cut out by a heavy chisel, piles are driven and the whole filled with concrete.

On the inside of the sea wall formed by the caissons is a buttressing wall of rock. The caissons are joined together and the sea wall completed by curved slabs of reinforced concrete, which present their con-

As it will appear

vex surfaces to the interior sand fill. Grooves are provided at each side, and into these grooves canvas stockings are placed, into which grout is forced under pressure, so that a firm union is made between caissons and slabs. Then the caissons are joined to the clusters of piling by ties of reinforced concrete running the whole width of the building. These are poured on the ground, but the caissons and curved slabs are prepared elsewhere.

The accompanying plans and photographs will convey more details of the work.

Outside the sea wall will be a wharf wall and fenders of eucalyptus piling.

### Design of the Shed

In his paper, from which extracts have been taken, Mr. White discussed the general features of the transit shed and warehouse as follows:

"Among the facilities which go to make up a properly coordinated port terminal, the warehouse has come to be regarded as a well-nigh indispensable unit. The necessity of providing adequate space for long or short term storage, and for the assembling, grading and reconditioning of cargoes of various kinds is a recognized fact. In a busy port the use of the transit sheds for this purpose is obviously to be considered only in exceptional cases. That the need of storage facilities cannot be properly served except by a warehouse so located as to be easily accessible from the waterfront is a fact which has been recognized for some time by the Board of State Harbor Commissioners. In the spring of 1921, therefore, after the question of a suitable location had been given careful consideration and the best available site had been selected, the engineering department was instructed to prepare plans for such a facility and to proceed with its construction. This led to the development of what has come to be known locally as the China Basin Terminal.

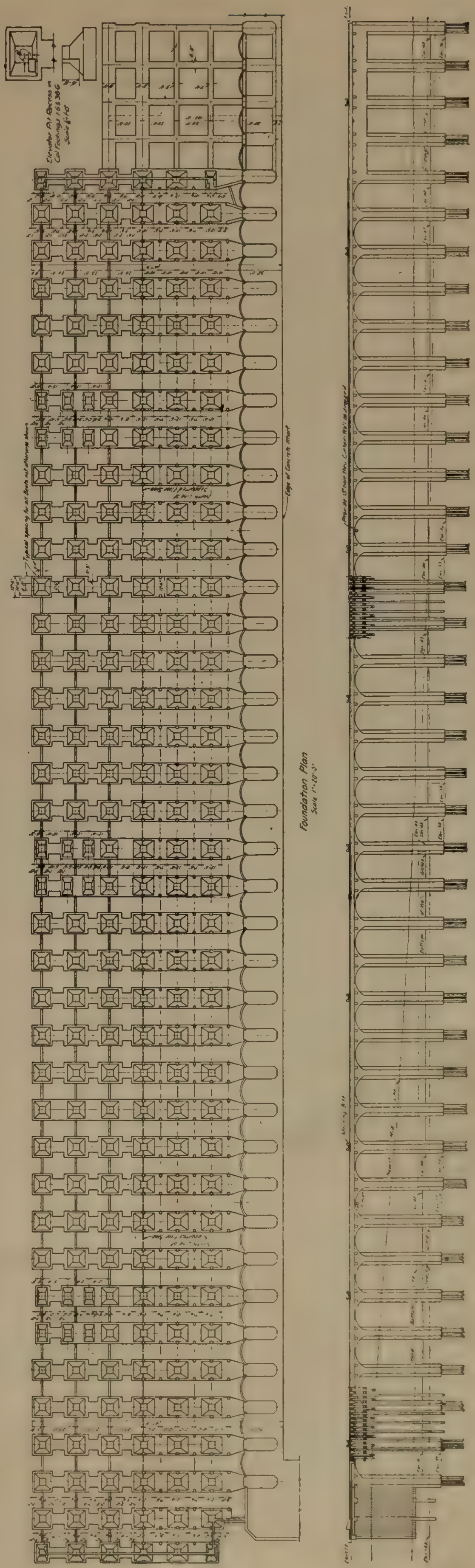
### Factors to Be Considered

"As a basis for approaching the problem, it was assumed that the cargoes to be handled through the terminal would move in at least one direction by water and that this constituted the primary justification for the development. With this fact in mind the following are a few of the points which naturally suggested themselves as demanding careful consideration:

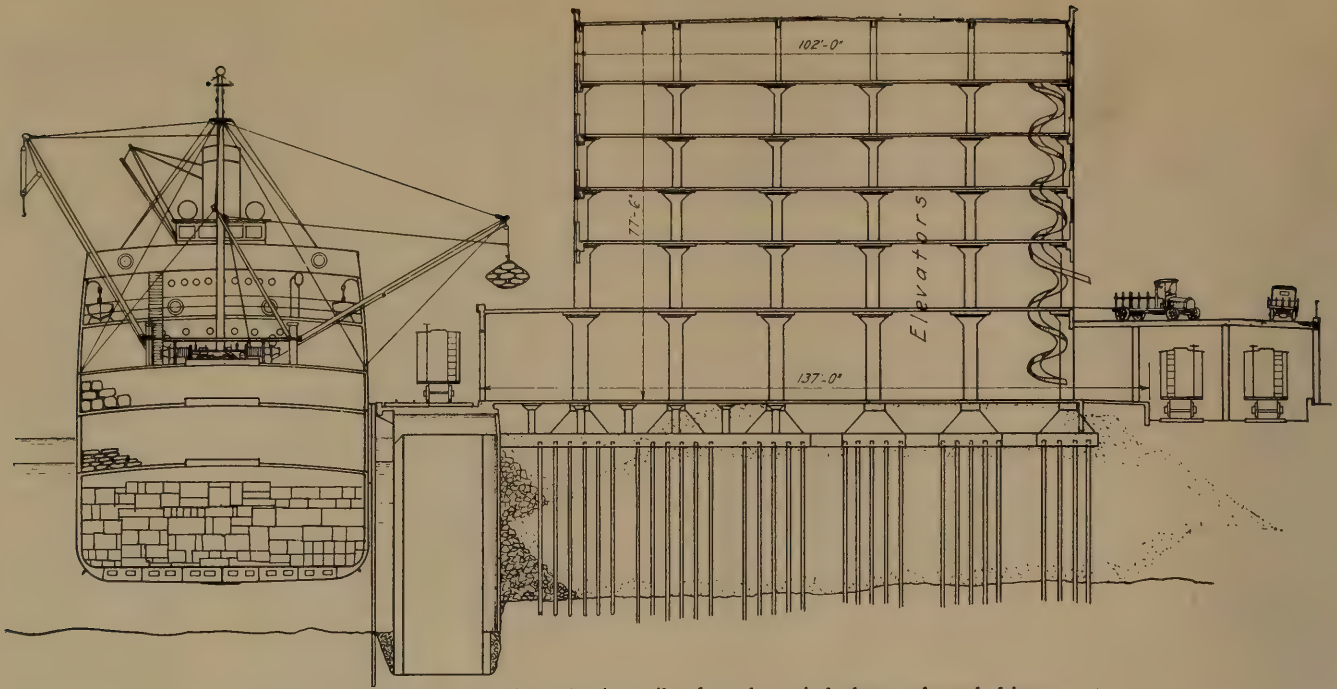
"1. Movement of Cargoes: Inbound cargoes discharged from ship, lighter or barge may move to the transit shed or warehouse or directly into cars or trucks. Cargoes deposited in the transit shed must later move by rail truck or water or be transferred to the warehouse. In the same way outbound cargoes may be received by any type of carrier for transfer directly to the ship or for transfer to the transit shed of warehouse and later to the ship. In a terminal having both transit shed and warehouse accommodations accessible to rail and trucks, cargo may move over at least sixteen different routes; and it is imperative that the movement over each of these routes should be as expeditious and economical as possible.

"2. Berthing Accommodations: The berth alongside the terminal must be of such length and have such depth of water as will permit of the docking of the largest ship which is expected to use the facility. The width must be sufficient to permit of bunkering the ship or of handling cargo to or from a barge on the off-shore side, and at the same time to afford ample clearance for other vessels passing the berth.

"3. Accommodations for Other Carriers: Adequate trackage must be provided, not only directly adjacent to the terminal, but in the immediate vicinity for the storage of loaded and empty cars. Ready access must



Front elevation and foundation plan of the China Basin Terminal



Section of the China Basin Terminal, showing railroad tracks, spiral chutes, elevated driveway, etc.

be provided for trucks and arrangements should be made to give them quick dispatch without interfering with other cargo movements.

### Principal Warehouses Studied

"In working out the details of this development a study was made of the principal warehouses of a similar nature both in this country and in Europe. A number of modern installations of this character both on this coast and on the Atlantic were also visited and a study made of their methods of operation. The largest and most modern port terminal warehouses in this country are the army supply bases which were constructed during the World War. . . ."

After discussing the principal features of the Brooklyn Army Supply Base, the New Orleans Army Supply Base and the Boston Army Supply Base, Mr. White continued:

"Other examples might be cited, but it is believed that this brief description of these three modern warehouse terminals is sufficient to indicate a few of the variations in layout which may be necessary on account of varying local conditions in different ports. After studying these and other installations it was concluded that, other things being equal, the arrangement which provided the shortest route for the movement of cargo between ship and warehouse and between the warehouse and truck or railroad car would be the most efficient. This conclusion, together with the conditions existing at the site selected for the China Basin Terminal, governed the plan finally decided upon.

### Transit Shed and Warehouse

"The terminal as planned will consist of a combined transit shed and warehouse located on submerged land at the northerly end of China Basin. The terminal building will be 812 feet in length and six stories high. The width of the first floor will be 137 feet; at the level of the second floor the wall on the wharf side will be set back 20 feet and on the land side 15 feet, so that all floors above the first will be 102 feet in width. Two depressed tracks will be provided along the land side of the building and two flush tracks will be located on the wharf in front of the building. These tracks will connect with the main line of the Belt Railroad and ample car storage will be available in the immediate vicinity.

"The 20-foot working platform at the level of the second floor on the slip side will permit of the handling of cargo directly to or from the ship and will facilitate the use of the second floor as an inbound or outbound transit shed. To further facilitate this use an elevated driveway will be provided at the level of the second floor above the two depressed tracks and the extension on the land side of the building. It will be

On the left, caissons ready for launching; on the right, putting a curved slab in place. The groove at the side is grouted to make a close joint with the caisson reached by a ramp from the street level and will make the second floor directly accessible to trucks, thus permitting the handling of cargo to and from the upper floors without adding to the congestion of the first floor driveway or interfering with the loading or discharging of cars.

### Details of the Equipment

"The building will be divided by transverse fire walls into three sections and each section will be served by two freight elevators. The elevators will be 9 by 17 feet with a capacity of 10,000 pounds or four trailer trucks. They will be located in the second panel from the inner side of the building, and the horizontal distance to be covered in the movement of freight from the center of the elevators to the edge of the wharf will be approximately 115 feet. The building will be equipped with spiral chutes for the delivery of freight from the upper floors to cars and trucks or to the first floor for transfer to ships. Adjustable landing platforms will be provided which can be placed opposite the doors on the wharf side of the building at any floor level. Attachments for burtoning falls will be provided so that cargo can be landed on the second floor platform or on the movable platforms at any floor. The terminal is also being designed and constructed so as to permit of the installation of roof cranes and semi-portal gantry cranes.

"A recent report by the committee on yards and terminals of the American Railway Engineering Association contains an analysis and recommendations covering certain design factors for warehouse facilities. Although this analysis deals more particularly with railroad terminals, a comparison between the recommendations and the plans adopted for the China Basin Terminal are of interest. In the report the floor area referred to is the gross area of the warehouse, the shipping platform space is the space adjacent to car sidings, and the storage space is the gross area minus the area of the shipping platform.

### China Basin Compared

"The comparison is as follows:

"1. Committee Recommendation: One elevator for each 40,000 square feet of warehouse space.

"China Basin Terminal: One elevator for each 50,000 square feet of warehouse space. This is on the basis of the four upper floors only, the first two floors being considered as transit sheds.

"2. Recommendation: Area of shipping platform 4 per cent of area of warehouse storage space.

"Terminal: Area of shipping platform 3¼ per cent of area of warehouse storage space. The shipping platform adjacent to the inshore depressed tracks only is referred to.

"3. Recommendation: One car length of track siding for each 17,600 square feet of warehouse storage area.

"Terminal: One car length to each 8960 square feet of warehouse area. In this comparison the area of the first floor driveway is deducted.

"4. Recommendation: One foot of tailboard frontage for each 1100 square feet of warehouse storage area.

"Terminal: One foot of tailboard frontage for each 1080 square feet of warehouse storage area. In this case only the five upper floors are considered, the assumption being that the first floor will be served by the first floor driveway.

### Progress of the Work

"As has been said, the terminal is located at the northerly end of China Basin and is bounded by the basin, Third Street, Berry Street and The Embarcadero. During 1921 the site was investigated by taking borings and soundings, and detailed plans and specifications were prepared for the substructure. Plans of the superstructure were also begun and work on these is now under way. In February, 1922, a contract was let for the substructure and it is now under construction. . . .

"It is expected that the substructure will be completed in July of next year and that the construction of the terminal building will be proceeded with immediately thereafter."

The terminal has been designed to permit of the installation of gantry cranes and roof cranes to land cargo from the ship to any floor of the building, but whether cranes will be installed has not been decided.

The cost of the substructure will be about $950,000 and of the entire terminal about $2,300,000.

# THE ADMIRAL-ORIENTAL LINE

A. D. LASKER, chairman of the United States Shipping Board, has announced that the government ships operated from Seattle to the Orient by the Pacific Steamship Company (the Admiral Line) would be operated by a new company to be known as the Admiral-Oriental Line, of which R. Stanley Dollar is president. The old Admiral Line operated five passenger ships (President McKinley, President Jackson, President Grant, President Jefferson and President Madison) and four freighters between Seattle and the Far East.

The Shipping Board has always felt that one of the most important duties that devolved upon it was the establishment of a permanent American line between Seattle and the Far East, and in allotting its ships to the Admiral Line it felt that its hopes would be realized.

The Pacific Steamship Company, however, operates many important ships of its own in the coastwise trade. The board felt that properly there had to be a division of attention on the part of the officials of the Pacific Steamship Company between its own ships in the coastwise trade and the allocated ships of the government to the Far East. Therefore, the Shipping Board finally came to the conclusion that it would best serve the interests of all concerned to make a separation in the situation, leaving the Pacific Steamship Company free to devote all its attention to the operation of its own ships in the very important trade in which they are engaged.

With this in mind, R. Stanley Dollar, who is one of the largest stockholders in the Pacific Steamship Company but has not been active in its affairs, and who is one of the most experienced operators in the Far Eastern trade, was induced to take up his residence in Seattle and to form a new company, to be known as the Admiral-Oriental Line, to which the Shipping Board allocated its ships running out of Seattle.

The new arrangement went into effect October 14. Mr. Dollar became president of the Admiral-Oriental Line, devoting his entire time to the enterprise, and retained as his vice-president A. F. Haines, who managed the government ships for the Pacific Steamship Company. Mr. Dollar retains all his interest in the Pacific Steamship Company; the present arrangement merely constitutes a separation of the government's ships into a company that will devote its entire time to the operation of the allocated ships.

# SELECTION OF THE BEST KIND OF PROPELLING MACHINERY

By J. L. ACKERSON*

NEVER before has the marine engineering fraternity had so many different types of propelling machinery to select from, and there is no empirical formula which can be applied to help select the best type. The problem of the shipowner in this respect is the most important one he has today. Among the many factors to be considered in deciding what is the most suitable type are reliability (this is the most important single factor, for without reliability other advantages are very much discounted); economy in operation, initial cost, and weight, the relative importance of the last three depending on the type of ship under consideration.

Numerous papers have been presented at these meetings, practically all of them having been prepared by the shipbuilder—and they are thoroughly prepared, too; but there must be many factors that the shipowner is more familiar with than the shipbuilder, and it would be very interesting to hear from the shipowner his ideas on this matter.

### Reliability

Reliability is something less tangible than the other three and responsibility less easily placed, because the factors controlling reliability emanate from two different sources: (1) the owner through the selecting of competent personnel; and (2) the builder. No matter how well a machine has been designed and constructed, if placed in the hands of an incompetent operator it will become unreliable; and vice versa, no matter how good the operating engineer, if the proper factors have not been used in the design and care in the construction, then the machinery is again unreliable; so that it is absolutely necessary for the operator to thoroughly understand and be whole-heartedly in support of any new design, and for the designer to realize that the cost of fuel per horsepower, while important, is not the only consideration. In the past five years we have had a very costly experience through sending to sea a large number of units (the design of which to begin with is questionable) in charge of engineers who were only half trained.

### Economy

Economy in operation (that is, the fuel per horsepower) and initial cost usually bear a very close relation to each other, and it is only a question of figures to determine whether any particular type is worth the money as compared with any other type; and here again the type of vessel and the trade the vessel is employed in play an all-important part, as, for example, most tramp steamers over a cycle of, say, seven years are laid up for considerable periods at a time owing to there being no freight. During this lay-up the portion of expense due to fixed charges is going on all the time, while that portion consisting of fuel and supplies and operating personnel stops when the ship is laid up.

### Weight

Weight is the least important except in the case of special types like shallow-draught boats, express-type steamers, warships, etc., because, except in special trades—viz., coal, ore or oil-carrying—it is seldom that a ship is loaded down to a loaded draught mark, even when full of cargo.

With this brief introduction I will now present comparisons of the following different types of machinery and ships:

Geared turbines with Scotch boilers.
Geared turbines with watertube boilers.
Reciprocating steam engines with Scotch boilers.
Reciprocating steam engines with watertube boilers.
Diesel engine, four-cycle.
Diesel engine, two-cycle.
For 5000-ton freighter at 10½ knots.
For 7500-ton freighter at 11 knots.
For 8800-ton freighter at 10½ knots.
For 10,000-ton freighter at 12½ knots.
For 10,500-ton tanker at 10½ knots.
For 17,000-ton displacement passenger ship at 15 knots.

### Motorships and Long Voyages

From Plate 1 the one outstanding feature is the greater savings for diesel-engine ships in the long-voyage trades, and this is chiefly due to the saving of cargo space required for carrying fuel oil rather than to the saving in cost of fuel oil, operating personnel, and fixed charges. Also, that for short voyages the diesel engine should be given very careful consideration before a selection of the type to be used is made.

The different comparisons show that there is not much difference between the weight of diesel engines and steam reciprocating engines, but it should be borne in mind that for steamers up to 12 knots speed the revolutions per minute of the diesel engine are considerably higher than those of the corresponding steam engines—in the ratio of about 110 to 75. This undoubtedly means a less efficient propeller for all single-screw types. On faster boats the advantages of the slower revolutions per minute gradually disappear. In comparing weights, allowance should be made for reserve feed water for the steamer; if this is done, steam-engine weights will invariably be greater than diesel-engine weights for voyages of ten days and over, except in the case of larger power geared-turbine jobs than those now under consideration.

### Twin-Screws Needed for Large Power

It should be noted that, whereas powers of four to five thousand are possible on single-screw steam installations, it is necessary to go to twin-screw installations for diesel engines. This incurs an extra cost in hull construction, necessitating two shaft alleys which cut up the after holds and make it more difficult to stow cargo, as well as actually decreasing the cubic of the holds.

Originally it was my intention to resolve the saving in cargo space due to fuel-oil requirements into dollars per year, but owing to the uncertainty of freight rates I gave up the idea as being impracticable and have shown this advantage in tons per voyage. The alternative to carrying this large quantity of fuel oil would be to buy it at the ports of call. Which choice would be the better would depend, of course, on the price of the fuel oil at, and the freight rate to, those particular ports.

### Effect of Price Variations

The initial costs listed in Plate 1 may be open to criticism, owing to prices being so spotty and varied at the present time. These prices are based on firm quotations of the lowest reputable bidder and include machinery installed ready for use. The same remark applies to weight. Different builders vary considerably, but, whatever error there is, the percentage of error will be the same for all types and will be in the same direction; and as it is the difference in cost and the difference in weight which we are most interested in, the percentage of error will be very small.

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* Paper read at the thirtieth general meeting of the Society of Naval Architects and Marine Engineers, New York, November 8 and 9.

The machinery weights do not include hull engineering or any portion of the machinery usually located in the engine room but necessary for deck machinery only, such as auxiliary generating sets for generating electricity to be used on electric deck machinery.

I have not given the cubic required for the machinery space, because in all cases the space required is so near the 13 per cent required by the United States Tonnage Rules as not to justify the loss of the 33 per cent deduction to gross tonnage, which is permitted when machinery space is at least 13 per cent of the cubic of the ship.

### The Opposed-Piston Type

I have not dealt with the engines which offer the greatest saving in space and weight, because up to the present time none have been built in this country, but it would appear to me that the opposed-piston type of engines like the Fullagar and the Doxford offer many advantages that cannot be overlooked by

| TYPE OF SHIP | | MACHINERY | | | COST OF FUEL AT SEA PER DAY | COST OF FUEL PER YEAR | | | COST OF OPERATING PERSONNEL | DEPRECIATION CHARGES 15% | TOTAL COST PER ANNUM | FEED WATER MAKE UP PER DAY | FUEL OIL REQUIRED FOR FOLLOWING DISTANCES ALLOWING 15% MARGIN | | | | INNER BOTTOM TANK CAPACITY | CARGO SPACE TAKEN UP FOR FUEL OIL FOR FOLLOWING DISTANCES | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | TYPE | WEIGHT | INITIAL COST | | 200 DAYS AT SEA | IN PORT | TOTAL | | | | | 5,000 M. | 10,000 M. | 15,000 M. | 20,000 M. | | 5,000 M. | 10,000 M. | 15,000 M. | 20,000 M. |
| 5,000 TON FREIGHTER 10½ KNOTS, SINGLE SCREW | 1650 I.H.P. | R.E. & S.B. | 380 TON | $167,000.00 | 22 TON<br>$220.00 | $44,000.00 | $1,650.00 | $45,650.00 | $13,920.00 | $25,000.00 | $84,570.00 | 6 TON | 440 TON | 880 TON | 1,320 TON | 1,760 TON | 680 TON | 0 | 200 TON | 640 TON | 1,080 TON |
| | | R.E. & W.T.B. | 316 TON | $163,000.00 | 22 TON<br>$220.00 | $44,000.00 | $1,650.00 | $45,650.00 | $13,920.00 | $24,500.00 | $84,070.00 | 6 TON | 440 TON | 880 TON | 1,320 TON | 1,760 TON | ABOVE FEED WATER REQUIREMENT | 0 | 200 TON | 640 TON | 1,080 TON |
| | 1500 S.H.P. | G.T. & S.B. | 355 TON | $175,750.00 | 22 TON<br>$220.00 | $44,000.00 | $1,650.00 | $45,650.00 | $13,920.00 | $26,400.00 | $85,970.00 | 6 TON | 440 TON | 880 TON | 1,320 TON | 1,760 TON | | 0 | 200 TON | 640 TON | 1,080 TON |
| | | G.T. & W.T.B. | 291 TON | $171,000.00 | 22 TON<br>$220.00 | $44,000.00 | $1,650.00 | $45,650.00 | $13,920.00 | $25,600.00 | $85,170.00 | 6 TON | 440 TON | 880 TON | 1,320 TON | 1,760 TON | | 0 | 200 TON | 640 TON | 1,080 TON |
| | | 4 CYCLE DIESEL | 400 TON | $207,000.00 | 7½ TON<br>$84.00 | $16,800.00 | $495.00 | $17,295.00 | $12,360.00 | $31,000.00 | $60,655.00 | 0 | 145 TON | 290 TON | 435 TON | 580 TON | | 0 | 0 | 0 | 0 |
| | | 2 CYCLE DIESEL | 350 TON | $222,000.00 | 7½ TON<br>$84.00 | $16,800.00 | $495.00 | $17,295.00 | $12,360.00 | $32,000.00 | $62,855.00 | 0 | 145 TON | 290 TON | 435 TON | 580 TON | | 0 | 0 | 0 | 0 |
| 7,800 TON FREIGHTER 11 KNOTS, SINGLE SCREW | 2700 I.H.P. | R.E. & S.B. | 625 TON | $230,000.00 | 34 TON<br>$340.00 | $68,000.00 | $1,650.00 | $69,650.00 | $14,280.00 | $34,500.00 | $118,430.00 | 8 TON | 650 TON | 1,300 TON | 1,950 TON | 2,600 TON | 1,038 TON | 0 | 262 TON | 912 TON | 1,562 TON |
| | | R.E. & W.T.B. | 538 TON | $224,000.00 | 34 TON<br>$340.00 | $68,000.00 | $1,650.00 | $69,650.00 | $14,280.00 | $33,600.00 | $117,530.00 | 8 TON | 650 TON | 1,300 TON | 1,950 TON | 2,600 TON | ABOVE FEED WATER REQUIREMENT | 0 | 262 TON | 912 TON | 1,562 TON |
| | 2500 S.H.P. | G.T. & S.B. | 570 TON | $244,000.00 | 34 TON<br>$340.00 | $68,000.00 | $1,650.00 | $69,650.00 | $14,280.00 | $36,600.00 | $120,530.00 | 8 TON | 650 TON | 1,300 TON | 1,950 TON | 2,600 TON | | 0 | 262 TON | 912 TON | 1,562 TON |
| | | G.T. & W.T.B. | 483 TON | $239,000.00 | 34 TON<br>$340.00 | $68,000.00 | $1,650.00 | $69,650.00 | $14,280.00 | $35,800.00 | $119,730.00 | 8 TON | 650 TON | 1,300 TON | 1,950 TON | 2,600 TON | | 0 | 262 TON | 912 TON | 1,562 TON |
| | | 4 CYCLE DIESEL | 650 TON | $307,000.00 | 11 TON<br>$130.00 | $26,000.00 | $490.00 | $26,490.00 | $12,720.00 | $46,000.00 | $85,210.00 | 0 | 210 TON | 420 TON | 630 TON | 840 TON | | 0 | 0 | 0 | 0 |
| | | 2 CYCLE DIESEL | 540 TON | $327,000.00 | 11 TON<br>$130.00 | $26,000.00 | $490.00 | $26,490.00 | $12,720.00 | $49,000.00 | $88,210.00 | 0 | 210 TON | 420 TON | 630 TON | 840 TON | | 0 | 0 | 0 | 0 |
| 8,000 TON FREIGHTER 10½ KNOTS, SINGLE SCREW | 2700 I.H.P. | R.E. & S.B. | 625 TON | $230,000.00 | 34 TON<br>$340.00 | $68,000.00 | $1,650.00 | $69,650.00 | $14,280.00 | $34,500.00 | $118,430.00 | 8 TON | 680 TON | 1,360 TON | 2,040 TON | 2,720 TON | 1,140 TON | 0 | 220 TON | 900 TON | 1,580 TON |
| | | R.E. & W.T.B. | 538 TON | $224,000.00 | 34 TON<br>$340.00 | $68,000.00 | $1,650.00 | $69,650.00 | $14,280.00 | $33,600.00 | $117,530.00 | 8 TON | 680 TON | 1,360 TON | 2,040 TON | 2,720 TON | ABOVE FEED WATER REQUIREMENT | 0 | 220 TON | 900 TON | 1,580 TON |
| | 2500 S.H.P. | G.T. & S.B. | 570 TON | $244,000.00 | 34 TON<br>$340.00 | $68,000.00 | $1,650.00 | $69,650.00 | $14,280.00 | $36,600.00 | $120,530.00 | 8 TON | 680 TON | 1,360 TON | 2,040 TON | 2,720 TON | | 0 | 220 TON | 900 TON | 1,580 TON |
| | | G.T. & W.T.B. | 483 TON | $239,000.00 | 34 TON<br>$340.00 | $68,000.00 | $1,650.00 | $69,650.00 | $14,280.00 | $35,800.00 | $119,730.00 | 8 TON | 680 TON | 1,360 TON | 2,040 TON | 2,720 TON | | 0 | 220 TON | 900 TON | 1580 TON |
| | | 4 CYCLE DIESEL | 650 TON | $307,000.00 | 11 TON<br>$130.00 | $26,000.00 | $490.00 | $26,490.00 | $12,720.00 | $46,000.00 | $85,210.00 | 0 | 220 TON | 440 TON | 660 TON | 880 TON | | 0 | 0 | 0 | 0 |
| | | 2 CYCLE DIESEL | 540 TON | $327,000.00 | 11 TON<br>$130.00 | $26,000.00 | $490.00 | $26,490.00 | $12,720.00 | $49,000.00 | $88,210.00 | 0 | 220 TON | 440 TON | 660 TON | 880 TON | | 0 | 0 | 0 | 0 |
| 10,000 TON FREIGHTER 13 KNOTS SINGLE SCREW | [illegible] I.H.P. | R.E. & S.B. | 910 TON | $363,000.00 | 57 TON<br>$570.00 | $114,000.00 | $3,300.00 | $117,300.00 | $14,640.00 | $54,500.00 | $186,440.00 | 12 TON | 910 TON | 1,820 TON | 2,730 TON | 3,640 TON | 1,090 TON | 0 | 730 TON | 1,640 TON | 2,550 TON |
| | | R.E. & W.T.B. | 750 TON | $352,000.00 | 57 TON<br>$570.00 | $114,000.00 | $3,300.00 | $117,300.00 | $14,640.00 | $53,500.00 | $185,440.00 | 12 TON | 910 TON | 1,820 TON | 2,930 TON | 3,640 TON | ABOVE FEED WATER REQUIREMENT | 0 | 730 TON | 1,640 TON | 2,550 TON |
| | [illegible] S.H.P. | G.T. & S.B. | 780 TON | $346,000.00 | 47 TON<br>$470.00 | $94,000.00 | $3,300.00 | $97,300.00 | $14,640.00 | $52,000.00 | $163,940.00 | 12 TON | 760 TON | 1,520 TON | 2,280 TON | 3,040 TON | | 0 | 430 TON | 1,190 TON | 1,950 TON |
| | | G.T. & W.T.B. | 620 TON | $336,000.00 | 47 TON<br>$470.00 | $94,000.00 | $3,300.00 | $97,300.00 | $14,640.00 | $50,500.00 | $162,440.00 | 12 TON | 760 TON | 1,520 TON | 2,280 TON | 3,040 TON | | 0 | 430 TON | 1,190 TON | 1,950 TON |
| 12 KNOTS TWIN SCR. | [illegible] S.H.P. | 4 CYCLE DIESEL | 900 TON | $524,000.00 | 15 TON<br>$173.00 | $33,600.00 | $495.00 | $34,095.00 | $16,140.00 | $78,600.00 | $128,835.00 | 0 | 256 TON | 512 TON | 768 TON | 1,024 TON | | 0 | 0 | 0 | 0 |
| | | 2 CYCLE DIESEL | 800 TON | $547,000.00 | 15 TON<br>$173.00 | $33,600.00 | $495.00 | $34,095.00 | $16,140.00 | $82,200.00 | $132,435.00 | 0 | 256 TON | 512 TON | 768 TON | 1,024 TON | | 0 | 0 | 0 | 0 |
| | | | | | | 300 DAYS AT SEA | | | | | | | | | | | | | | | |
| 10,000 TON TANKER 11 KNOTS, SINGLE SCREW | 2700 I.H.P. | R.E. & S.B. | 587 TON | $237,000.00 | 34 TON<br>$340.00 | $102,000.00 | $650.00 | $102,650.00 | $14,280.00 | $35,500.00 | $152,430.00 | 8 TON | 650 TON | 1,300 TON | 1,950 TON | 2,600 TON | ALL TAKEN UP BY FEED WATER | 650 TON | 1,300 TON | 1,950 TON | 2,600 TON |
| | | R.E. & W.T.B. | 500 TON | $228,000.00 | 34 TON<br>$340.00 | $102,000.00 | $650.00 | $102,650.00 | $14,280.00 | $34,200.00 | $151,130.00 | 8 TON | 650 TON | 1,300 TON | 1,950 TON | 2,600 TON | | 650 TON | 1,300 TON | 1,950 TON | 2,600 TON |
| | 2500 S.H.P. | G.T. & S.B. | 532 TON | $253,000.00 | 34 TON<br>$340.00 | $102,000.00 | $650.00 | $102,650.00 | $14,280.00 | $38,000.00 | $154,930.00 | 8 TON | 650 TON | 1,300 TON | 1,950 TON | 2,600 TON | | 650 TON | 1,300 TON | 1,950 TON | 2,600 TON |
| | | G.T. & W.T.B. | 445 TON | $246,000.00 | 34 TON<br>$340.00 | $102,000.00 | $650.00 | $102,650.00 | $14,280.00 | $37,000.00 | $153,930.00 | 8 TON | 650 TON | 1,300 TON | 1,950 TON | 2,600 TON | | 650 TON | 1,300 TON | 1,950 TON | 2,600 TON |
| | | 4 CYCLE DIESEL | 653 TON | $330,000.00 | 11 TON<br>$130.00 | $39,000.00 | $195.00 | $39,195.00 | $12,720.00 | $49,500.00 | $101,415.00 | 0 | 210 TON | 420 TON | 630 TON | 840 TON | COULD BE USED AS CARGO SPACE | 210 TON | 420 TON | 630 TON | 840 TON |
| | | 2 CYCLE DIESEL | 645 TON | $352,000.00 | 11 TON<br>$130.00 | $39,000.00 | $195.00 | $39,195.00 | $12,720.00 | $52,600.00 | $104,515.00 | 0 | 210 TON | 420 TON | 630 TON | 840 TON | | 210 TON | 420 TON | 630 TON | 840 TON |
| | | | | | | 200 DAYS AT SEA | | | | | | | | | | | | | | | |
| 17,000 TON PASSENGER 15 KNOTS, TWIN SCREW | [illegible] I.H.P. | R.E. & S.B. | 1700 TON | $720,000.00 | 94 TON<br>$940.00 | $188,000.00 | $3,300.00 | $191,300.00 | $32,940.00 | $108,000.00 | $332,240.00 | 16 TON | 1,300 TON | 2,600 TON | 3,900 TON | 5,200 TON | 1,260 TON | 100 TON | 1,400 TON | 2,700 TON | 4,000 TON |
| | | R.E. & W.T.B. | 1400 TON | $700,000.00 | 94 TON<br>$940.00 | $188,000.00 | $3,300.00 | $191,300.00 | $32,940.00 | $105,000.00 | $329,240.00 | 16 TON | 1,300 TON | 2,600 TON | 3,900 TON | 5,200 TON | ABOVE FEED WATER REQUIREMENT | 100 TON | 1,400 TON | 2,700 TON | 4,000 TON |
| | 7800 S.H.P. | G.T. & S.B. | 1440 TON | $580,000.00 | 77 TON<br>$770.00 | $154,000.00 | $3,300.00 | $157,300.00 | $32,940.00 | $87,000.00 | $277,240.00 | 16 TON | 1,075 TON | 2,150 TON | 3,225 TON | 4,300 TON | | 0 | 950 TON | 2,025 TON | 3,100 TON |
| | | G.T. & W.T.B. | 1140 TON | $560,000.00 | 77 TON<br>$770.00 | $154,000.00 | $3,300.00 | $157,300.00 | $32,940.00 | $84,000.00 | $274,240.00 | 16 TON | 1,075 TON | 2,150 TON | 3,225 TON | 4,300 TON | | 0 | 950 TON | 2,025 TON | 3,100 TON |
| | | 4 CYCLE DIESEL | 1840 TON | $800,000.00 | 31 TON<br>$360.00 | $72,000.00 | $495.00 | $72,495.00 | $27,000.00 | $120,000.00 | $219,495.00 | 0 | 435 TON | 870 TON | 1,305 TON | 1,740 TON | | 0 | 0 | 105 TON | 540 TON |
| | | 2 CYCLE DIESEL | 1510 TON | $855,000.00 | 31 TON<br>$360.00 | $72,000.00 | $495.00 | $72,495.00 | $27,000.00 | $128,000.00 | $228,495.00 | 0 | 435 TON | 870 TON | 1,305 TON | 1,740 TON | | 0 | 0 | 105 TON | 540 TON |

R.E., RECIPROCATING ENGINE
G.T., GEARED TURBINES
S.B., SCOTCH BOILERS
W.T.B, WATER TUBE BOILERS

Plate 1, a comparison of costs of construction and operation of different types of vessels the prospective shipowner. From reports available, the Yngaren, fitted with a 3000-horsepower opposed-piston type engine, made by the Doxford Company, has given an excellent account of herself for her maiden voyage from the British Isles to Australia and back. This engine offers one or two very desirable features, viz., a slow-running engine for comparatively large powers, with the consequent efficient propeller, considerably smaller engine-room space and one shaft alley only.

### Conversions Considered

Owing to the diesel engine builders standardizing around an engine of 2500 shaft horsepower, I have used this power upon ships of 7500 to 8800 tons and on a 10,500-ton tanker. This assumption makes machinery for these types cost and weigh about the same but give us slightly different speeds. (The above figures hold good only so far as new machinery is concerned.) It so happens, however, that at the present time there is hanging over the market a very large tonnage owned by the Emergency Fleet Corporation and available at very much lower prices than the present actual costs for replacing the same. To convert any one of these 7500 to 12,000-ton steamers into diesel engine-driven boats, with 2500 shaft horsepower diesel engines, maintaining the existing auxiliary steam-driven machinery and deck machinery, would cost approximately $400,000, and this same change, together with changing the auxiliaries and deck machinery to the electric drive, would cost in the neighborhood of $550,000.

The first proposal would save the shipowner approximately 18 tons of oil a day; the second would save him about 22 tons of oil a day. For 200 days a year at sea and 165 days in port at $10 a ton for oil, the total saving for steam auxiliaries and diesel propelling engines in oil would be about $36,000, and the extra for fixed charges would be $60,000. For diesel propelling engines and electric deck machinery the initial cost would be in the neighborhood of $550,000. Saving in fuel oil would be 22 tons for 200 days and 5 tons for 165 days at $10 a ton—$53,000—and the extra due to fixed charges would be $83,000. The extra cost of lubricating oil for the diesel engine will be offset by the decrease in cost of operating personnel, so that, assuming the same price, whether the owner will run the ship as a motorship or as a steamship, the conversion is not justifiable except for the long voyages; but if these ships can be bought for conversion purposes at $30 a ton less than would be paid to continue as steamships, the fixed charges are reduced on a 10,000-ton ship to $37,000, and for almost any trade this change would be justifiable.

For conversion purposes under the Shipping Board plan, where new diesel machinery must be had, it would appear that the larger boats offer the best possibilities.

### Time in Port Important

Before closing I should like to say that, while I have taken 200 days at sea and 165 days in port per year for all the types except the tanker, this figure must, of course, depend on the trade the vessel is employed in. There are some trades where a ship is in port almost half the time, and it must be remembered that while a ship is in port it is not earning anything, while the fixed charges are still going on. Therefore the more costly propelling machinery is at a disadvantage as compared to a cheaper type running only a small portion of the time.

While I consider the table (Plate 1) a good guide, the only way the best type can be selected is by a careful comparison of the different types in the particular trade an owner wishes to engage in along the line given in the table, taking into account the character of the freight, length of voyage, freight rates, cost of fuel oil at ports of call, etc.

## MR. BRUSH'S VIEWS

MATTHEW C. BRUSH, senior vice-president of the American International Corporation, president and director of a score or more of well known American trading companies and formerly in charge of the Hog Island Shipbuilding yard, has just completed a tour of the principal Western cities in connection with the various interests which he serves. Mr. Brush is closely in touch with trade and credit conditions in all parts of the world and readily discussed the present and future situation of American ships and shipping.

"Expansion of foreign trade is the key to the future, and already we are turning it," he says. "We've broken the lock Germany had hung on South America. That door is open and we're going in. England is going in, too, and that means keen competition. Give us ships and rid us of our shackling shipping laws, and we won't fear competition there or elsewhere."

Mr. Brush maintains that our greatest and most profitable field is the Orient and it is impossible to prophesy the potentialities of our trade in that direction, provided that we are given some relief from the restricting regulations that encompass the American shipper. "What we need is an opportunity to do business on a level with competitors," states Mr. Brush.

We are told further that American officials in foreign ports do not accord our steamship men the same co-operation as do the consuls of the British and other nations.

Mr. Brush was accompanied on his Western tour by his mother and W. B. Dixon, who is assistant general passenger agent of the Chicago, Milwaukee & St. Paul Railway, of which line Mr. Brush is an official, and after an inspection of the railroad and of the mining conditions of Montana he proceeded to Puget Sound and thence down the Pacific Coast, visiting the principal ports in the interest of the Pacific Mail Steamship Company, of which he is a director.

Mr. Brush has made several trips to Europe recently and found conditions there improving much more slowly than in our country. Great Britain seems to lead the nations of Europe in returning to normal conditions, but France also is forging ahead very rapidly. Mr. Brush says he noticed that a very strong nationalistic spirit has grown up in the various European countries since the war.

# THE SOVEREIGN OF THE SEAS: 1852-1859

## Donald McKay's Fifth Clipper was the Pioneer Vessel in Transporting Whale Oil from Honolulu and Lahaina to the Atlantic

By F. C. MATTHEWS

THE extreme clipper ship Sovereign of the Seas was the fifth clipper and the twenty-third vessel launched by Donald McKay from his East Boston yards. The launching of the Chariot of Fame in April, 1853, brought the total number to twenty-eight, of an aggregate tonnage of 32,117; of this total 10,409 tons was for account of Enoch Train & Company of Boston. Included in their list were the Flying Cloud and the Staffordshire. Credit for the idea of creating the Flying Cloud is claimed as due to George Francis Train, junior partner in the Train firm, and the following from "Citizen" Train's biography regarding the conception of the Sovereign of the Seas makes interesting reading, although all the statements are not borne out strictly by the public records.

### To Eclipse the Flying Cloud

"The building of the Flying Cloud was a tremendous leap forward in shipbuilding; but I was not satisfied," said Train. "I told McKay that I wanted a still larger ship. He said that he could build it. And so we began another ship that was to outstrip in size and capacity the great Flying Cloud. I was desirous to name this ship the Enoch Train, in honor of the head of the Boston house, and had said as much to Duncan MacLane, who was the marine reporter for the Boston Post. MacLane had usually written a column for his paper on the launching of our ships. He wanted to have something to write about the new vessel. I told him the story of Colonel Train's life, and that we were going to christen the new vessel with his name. I did not consult Colonel Train, thinking that, of course, it was all right. The Post published a long account of the ship, and gave the name as the Enoch Train. When I went down to the office that morning Colonel Train had not arrived, but soon came in, walking straight as a gun-barrel, and seeming to be a little stiff. 'Did you see the Post this morning?' I asked. 'Premature,' he replied. That was all he said. He would not discuss the matter. I was nettled that he did not appreciate the honor I thought I was conferring on him. It was not for nothing that a man's name should be borne by the greatest vessel on the seas. I said to myself that the name should be changed at once. The ship was to be of 2200 tons' burden and I decided to call her the Sovereign of the Seas.

### Sold to a German

"The news that we were building a big ship was rapidly circulated throughout the world. Many shipping lines wanted to buy her before she was off the ways. Dispatches from New York shipping lines making inquiry as to price came almost daily. I invariably replied that we would take $130,000. But this was a little too stiff a price at that time, although the Flying Cloud had paid for herself in a single trip. I finally sold her to Berren Roosen, Jr., of Hamburg, Germany, through the brokers Funch & Meincke of New York, for $110,000. She was entered in my name and I was very proud of being associated with the greatest vessel then afloat in any water."

Regarding the early ownership of the Sovereign of the Seas, the History of New York Ship Yards states that she was registered at the Boston Custom House June 19, 1852, Donald McKay, managing owner. This register was surrendered at the New York Custom House June 18, 1853, with Andrew F. Meincke of New York as sole owner. Funch & Meincke were ship brokers at the time with offices at 93 Wall street, New York. In May, 1854, the vessel passed into the possession of J. C. Godeffroy & Son of Hamburg, Germany. At the time of her loss she was reported to be under the British flag, having been sold in London in June, 1858, for $40,000, after undergoing repairs to the amount of $12,500.

### Dimensions of the Clipper

The principal dimensions of the Sovereign of the Seas were: length of keel, 245 feet; length between perpendiculars, 258 feet; length over all, 265 feet; extreme breadth of beam, 44 feet; breadth of gunwales, 42 feet; depth of hold, 23½ feet, including 8 feet of 'tween decks; registered tonnage, 2421, American, old measurement. The length of her lower masts, fore, main and mizzen, were 89 and 93 and 82 feet respectively, as against 82 and 88 and 78 feet for those of the Flying Cloud. The length of the lower yards and the topsail yards of the Sovereign were, respectively, from fore to mizzen, 80 and 63 feet; 90 and 70 feet; 70 and 56 feet; those of the Flying Cloud were 70 and 55 feet; 82 and 64 feet; 56 and 45 feet. It must be remembered, however, that the Flying Cloud was 37 feet shorter on the keel than the Sovereign, 3 feet less in beam, and 2 feet less in depth of hold, while the registered tonnage was 639 tons less. The dead rise of the Flying Cloud was 30 inches, while in the

The Sovereign of the Seas

Sovereign it was but 20 inches; both ships had concave water lines, but the Sovereign was described as having longer and sharper lines than those of any ship or ocean steamer in the world at the time. Her stern was semicircular in outline, and very snug; her shear was carried boldly forward, imparting grace and lightness to the bows. Such was the harmony of her proportions that, viewed at a distance of two or three hundred yards, she did not appear to be any larger than many full modeled vessels of a thousand tons. All her accommodations were on the upper deck, leaving the 'tween decks clear for cargo. She had two spacious cabins built into a half-poop deck; a large house abaft the foremast for part of the crew, the galley and other purposes; a full topgallant forecastle, the space under which was also fitted up for the accommodation of the crew. Her bow terminated with the figure of a sea-god, half man and half fish, with a conch shell to his mouth, as though he were blowing it. She spread about 12,000 yards of canvas in a single suit of sails. As a whole, she was the most substantially built vessel that had then been produced in America.

### Starts Establishing Records

Going on the berth at New York for San Francisco, the Sovereign was loaded in thirty working days with 2950 tons of cargo and one year's stores; she then drew 21 feet as against 10¼ feet on being launched, these figures, of course, including her 3½-foot depth of keel. Her yellow metal sheathing was up to 20½ feet forward and 21½ feet aft, and with her black paint outside, buff inside, white made-up lower masts, black yards and bright booms, she was described as presenting a very beautiful picture. She had as crew besides the captain, four mates, two boatswains, two carpenters, two sailmakers, three stewards, two cooks, eighty able-bodied seamen and ten boys, a total of 105. Her freight and passage money amounted to $98,273.82. Captain Lauchlan McKay was appointed her commander. He was a brother of the builder and besides having been a master in the trans-Atlantic packet service, was also a practical shipbuilder and was in every way fully competent for the position he took.

Captain McKay was provided with wind and current charts by Lieutenant M. F. Maury, who advised the captain on the deck of his ship, when all ready for sea, to "keep as nearly as possible to these directions and in eighty-three days out you should be on the equator in the Pacific, while 103 days will probably see you in San Francisco." These prophecies were fulfilled to the letter, and the passage still stands as record for that particular season of the year. Leaving New York on August 4, 1852, Captain McKay encountered light and contrary winds for the first two weeks, making in that time only 600 miles. The ship was up with the Line on the 25th day out, however, and passed Cape St. Roque on the 28th day; these figures were for years the records for these runs during the month of August, and in fact it is understood that they still stand as such. From St. Roque to 50 degrees south latitude occupied 19 days, and rounding the Horn to 50 degrees in the Pacific took 9 days, during 4 of which the ship was practically becalmed. On October 12, in the latitude of Valparaiso, the weather being very stormy and a high sea running, the ship was struck by a squall that carried away the main and fore topmasts, the mizzen topgallant mast, and the foreyard, leaving not a thread of canvas forward. Captain McKay was equal to the emergency, and in a few days was again under full sail, crossing the Line 15 days after the accident and 83 days out from New York. Nineteen days later, November 15, 1852, anchor was dropped in San Francisco harbor, 103 days after it had been hove up off the Battery. The vessel's best day's run on the passage was 368 miles; best speed 17 knots. She was the lion of the waterfront and throngs crowded to see her, while the newspapers were full of accounts of her performances, and praise for her power and beauty was liberally bestowed. Captain McKay was given much credit for his work of re-rigging the ship at sea, instead of putting into Valparaiso, and was subsequently presented by Walter R. Jones, president of the Atlantic Mutual Insurance Company, on behalf of the underwriters, with a massive and costly silver dinner service.

### Near Disaster at San Francisco

The Sovereign was chartered to take a cargo of whale oil from Honolulu to New York. When about ready to sail from San Francisco she dragged her anchors in the gale of the night of December 16, fouling the old bark Otranto and losing her spanker-boom. The bark had her jibboom and catheads carried away, her bulwarks stove in and also lost her fore and main topmasts. The Sovereign set sail for Honolulu December 22, and one paper stated: "We confidently expect that she will make one of the quickest runs, both to the Islands and to New York, ever accomplished." As circumstances proved, however, she was not to get away without further mishap, for on starting to leave the harbor in tow of the tug Resolute, it was found that the latter had not power enough to handle the ship against the ebb tide and she narrowly escaped running foul of a hulk. Sail was then made and she outsailed the tug, which was accordingly discharged by the pilot. In passing through the narrows between Fort Point and Black Point, the ship missed stays and came between two currents, which carried her stern on the sand. An anchor was let go and fortunately there was no sea on and but little wind. After about two hours, the pilot finding the chain slack, ran a kedge anchor out and the ship was hove off without injury and was anchored within Fort Point until the following day. She had a small cargo for New York and Honolulu and 1100 tons of stone ballast.

### The Voyage to Honolulu; Its Unpropitious Beginning

A passenger wrote the following account: "It was a cold, bleak morning, December 22, 1852, when the Sovereign of the Seas, containing several passengers, weighed anchor and endeavored to escape from the Bay of San Francisco. It was with a mingled feeling of pride and satisfaction that I paced her decks; for the queenly vessel was steering for strange climes where the sun was more genial and the winds less chilly. The Resolute had already towed us to the north side of the bay, and was on her way back to the city. A smart breeze that induced us to button up our overcoats was wafting our gallant ship at the speed of 10 or 11 miles an hour. We were about bidding a last adieu to the entrance of the bay, for the ship was on her last tack. The Sovereign was steering near the base of Point Bonita, when suddenly the wind left her sails and she was swept by a heavy tidal current to the middle of the channel. The monster clipper was too lightly manned and before anything could be done efficiently to arrest the danger that threatened her, she was within a few yards of the rocks that lay strewn directly under the guns of Fort Lobos. There was something horrible in the prospect of going ashore upon that beach where several valuable cargoes and splendid vessels had previously been dashed to pieces. The Sovereign, which a few moments before was worth over $100,000, was apparently worthless in that critical moment. Nothing but an immediate plunge of the anchor saved her, her cargo and her passengers, and even every surge of the waves pressed her nearer to the shore so that her rudder thumped the sunken rocks. In addition to all this, there was a strong probability of a rough night. But as night was rapidly approaching and hope expiring, a favorable breeze sprung up and the flood tide set in. Taking the advantage of so favorable a state of things, the cable was slipped and we left the breakers without having received any material injury. It was a pleasant thing thus to be rescued from the very jaws of destruction, especially when everything seemed conspired against us. It was not until we had returned some distance up the bay and were once more at anchor that we could realize the danger from which we had just escaped. The sun went down angry and red and the skies were gathering blackness. Next morning it was blowing a gale, with heavy rains and mists, so that we could only see a short distance. About noon, the 23rd, the winds suddenly moderated, the storm clouds dispersed in a sun shower; at 1 o'clock the anchor was weighed and we went to sea with the ebb tide. The pilot was discharged before sunset and night fell just as land was out of sight. Next day not a cloud was to be seen, but on Christmas Day the storm clouds gathered after sunrise, with a strong southwest wind, which by noon had increased to a gale. At 1 o'clock the gale was at its height and all hands were called to shorten what little sail was on the ship. After the gale had finally passed away, it was found that one entire arm of the finely carved figurehead 'Neptune' had been carried away. Besides the passengers there were seasick one large grizzly bear, a rainbow bear, a wolf, a coyote, a wildcat and a leopard-cat, all destined for exhibition in the Crystal Palace, New York, and probably the elder of the two bruins suffered more than all the rest of his companions. The 28th December was a day of rains, squalls and adverse winds throughout. The position at noon was 32:50 north latitude, 135:39 west longitude. A child was born to a passenger and we named him 'Young Sovereign.' The closing days of 1852 were very stormy. The opening of 1853 was no better, except that we were favored with a fair wind. After New Year's Day the weather became more genial, the sky more serene and the winds lighter but more steady. 'Land Ho!' was shouted at daylight January 15, the three islands of Maui, Oahu and Molokai being distinctly visible. At noon we were steering for the southeast point of Oahu, the two capes of Makapuu and Leahi being prominent, eight miles southeast from Honolulu."

### Tall Sailing in the "Roaring Forties"

The presence in the Pacific Ocean of the California clippers, which after the discharge of their outward cargoes were obliged to sail in ballast, was a boon to the whaling industry by opening up cheap transportation of their catch from the rendezvous of Honolulu or Lahaina to the home ports of New Bedford or New London or to New York. The blubber-hunters, besides being saved all the expense incident to the heretofore necessary long return voyage, were now allowed to continue cruising, immediately after refitting, so that there was benefit to all concerned.

The Sovereign of the Seas was the pioneer clipper in this phase of ocean transportation. With a full cargo of whale oil and bone she left the port of Honolulu February 12, 1853; at 1 o'clock in the morning of May 6 the light on Barnegat was sighted after soundings had been made in 40 fathoms at noon of the previous day. On May 3 the ship was 432 nautical miles in a straight line from Sandy Hook, having sailed in the previous 79 days a distance of 15,191 nautical miles, an average of 192.3 a day and a little better than 8 knots an hour for the whole time.

The passage from Honolulu to New York was 82 days, and as a whole is not particularly remarkable (as will appear from accompanying tables), but certain portions of it were made at such speed as to warrant Lieutenant Maury making a special report thereof to Secretary of the Navy James C. Dobbin. The ship traversed a portion of the South Pacific about which there was only conjecture as to direction and force of wind, etc., but Maury's conclusions were that strong westerlies would be found to prevail south of 45 degrees. The following data, taken from a copy of his official report, show that his theories were entirely correct. Up to the time that the Sovereign lost the southeast trades (in 45 south, 164 west), she had had a good though not a phenomenal run of 22 days from port; best day, 269 nautical miles; poorest, 71; on the twentieth day at sea she had sprung her foretopmast and been unable to fish it for more than three days. On the twenty-sixth day out she found herself within the trade-like west winds of the Southern ocean and from March 9 to March 31, from the parallel of 48 degrees south in the Pacific to 35 degrees south in the Atlantic, an interval of 22 days, the ship made 29 degrees latitude (having gone as far south as 56:30) and 126 degrees of longitude, a distance of 5391 nautical miles. The greatest easting made in one day was 8 degrees, 44 minutes, that day being 23 hours, 25 minutes, 4 seconds long, and during that time the distance run was 362 nautical miles. The highest rate of speed reported was 18 knots. Out of these 22 days the log shows an average of 305½ nautical miles for 11 consecutive days, and for four days in succession an average of 344 miles. Lieutenant Maury found in comparing the logs of the Sovereign and Flying Cloud that the best consecutive 24 hours' run of the former exceeded that of the Cloud by only one-tenth of a mile; it was conceded, however, that conditions for the Sovereign were somewhat more favorable than were those for her rival. The run of the Sovereign from the equator to Sandy Hook, 17 days, was very good.

The actual earnings of the ship on the first round voyage were stated as being about $135,000. On the homeward run the number of men in the crew was about one-half of what she had on the outward passage, there being but 38 seamen and six boys.

While at New York some prominent shipping men endeavored to arrange for a race to San Francisco in which the Sovereign was to compete. W. H. Webb, the builder of the recently-launched Young America, offered to back his ship against the Sovereign or any other clipper in the amount of $20,000, but the existing low state of freights in the California trade had caused the diversion of a number of first-class vessels, including the Sovereign, to the European trade, so that nothing came of the challenge. The backers of the McKay clipper, however, announced their willingness to take up the gauntlet at the earliest opportunity, but their favorite went to Australia instead of returning to this country from England.

### A Record for June Passages

With her builder, Donald McKay, and his wife, among her passengers, the Sovereign left New York for Liverpool at 3 p. m., June 18, 1853, and at 6:30 a. m. on the 19th the lightship bore north, distant one mile. Cape Race was sighted at 6 a. m. on the 24th; Cape Clear was made at 6 a. m. July 1; the pilot taken at 2 p. m. on the 2nd and the ship anchored in the Mersey at 10 p. m. that day. The passage figured up 13 days, 22 hours, 50 minutes from dock to anchorage and this time is stated by competent authority never to have been equaled by a sailing vessel during the month of June. The best day's run was 344 miles, June 28, the log stating: "Wind N., strong breezes; took in topgallant sails; single reefed topsails; ship very crank, lee rail under water and rigging slack." On the 30th the run was 340 miles, "wind N.W.; strong breezes and squally." From her position on the Grand Banks June 25, in latitude 46:20, longitude 50:10, she was 135 hours to Cape Clear, a distance of 1668 miles, at an average of 296 miles a day or 12.73 knots an hour.

### To Australia as a Black Ball Liner

The Sovereign attracted much attention on arrival at Liverpool and was chartered by Messrs. James Baines & Company for a round voyage to Australia in their line known as the Black Ball of Liverpool. (This line had no connection with the older and more celebrated line of the same name, American-owned and operating out of New York across the Atlantic.) With Captain Warner in command, the ship left Liverpool in September, 1853, with 65 cabin passengers and a cargo valued at nearly one million dollars. From Melbourne Captain Warner wrote the Liverpool Mercury that he had a long and tedious passage of 77 days out, due to light and contrary winds; had but two favorable chances; in one ran 1275 miles in four consecutive days and in the second ran 3375 miles in twelve days. The first thirty-five days out he had skysails set and also had them set on thirty other days of the passage. He went as far south as 53:30, but found no strong winds. About one-half of the crew were disabled, including the first mate.

The Sovereign cleared from Melbourne January 23, 1854, and was reported to have arrived at London April 20; passage, 86 days. It was stated that she carried large shipments of gold dust, to the amount of over four tons, and that some of the crew attempted a mutiny in order to seize the ship and get away with the gold, but Captain Warner suppressed the mutineers and kept them in irons.

The second voyage to Australia came nearly being her last. Leaving London August 1, 1854, under command of Captain Muller, she was nearly up with the Cape of Good Hope September 8, 38 days out, when in a sudden and very severe squall all her upper masts with everything attached were carried away, leaving nothing standing but the three lower masts. Six days were required to make repairs; a succession of easterly gales was encountered instead of the expected westerlies, and the prospect of a record passage was spoiled. It was stated that she had made 410 miles in one day and that her log proved her to have traveled occasionally at the rate of 22 knots an hour.

From Sydney the Sovereign proceeded to Shanghai via Hongkong, and went thence to London in about 113 days.

### Later Career and Final End

From 1856 the Sovereign appears to have been engaged in general trading. She was reported to have been sold in London in June, 1858, for $40,000, having just undergone repairs to the amount of $12,500. In December, 1858, she was listed as being in port at Whampoa under the British flag. She went aground on the Pyramid Shoal, Straits of Malacca, August 6, 1859; a three-masted schooner sent to her aid from Singapore was the means of hauling her off, but through some disaffection of the crew, the ship did not get under way soon enough, and a squall struck her, driving her on shore again. She bilged and proved a total loss, although considerable of the cargo was saved in a damaged condition. Thus ended the existence of one of the most famous of the American clipper fleet, the like of which will ne'er be seen again.

### COMPARISON OF RECORD RUNS FROM SAN FRANCISCO AND HONOLULU TO EASTERN PORTS

| | Year | Ds. | Hrs. |
|---|---|---|---|
| Sov. of the Seas—Honolulu-N. Y. | 1853 | 82 | |
| N. B. Palmer—Honolulu-N. Y. | 1854 | 82 | |
| Dreadnought—Honolulu-New Bedford | 1865 | 82 | |
| Shooting Star—Honolulu-New London | 1854 | 83 | |
| Comet—San Francisco-New York | 1853-54 | 76 | 7 |
| Northern Light—S. F.-Boston | 1853 | 76 | 8 |
| Bald Eagle—S. F.-New York | 1854 | 78 | 22 |
| Contest—S. F.-New York | 1853 | 79 | 12 |
| Flying Cloud—S. F.-New York | 1853 | 82 | |
| Young America—S. F.-New York | 1870 | 83 | |
| Comet—S. F.-New York | 1853 | 83 | 18 |
| Trade Wind—S. F.-New York | 1853 | 84 | |
| Messenger—S. F.-Philadelphia | 1853-54 | 84 | |

All the ships from Honolulu had full cargoes; of those from San Francisco, only Young America had a full cargo; Jacob Bell had a part cargo of eastern merchandise being returned on account of over supply and dull market. The passage of Young America still stands as the fastest on record for a loaded ship on this run; she was exactly 81 days from anchorage in San Francisco Bay to within 10 miles of Sandy Hook lightship, but on account of dense fog and inability to get a pilot she had to stand off shore; the following day received pilot, 82 days flat, from San Francisco.

# EFFICIENCY IN THE OPERATION OF STEAMSHIPS

By CAPTAIN DANIEL A. J. SULLIVAN*

SINCE the inception of transporting freight by means of water routes until the present time, there has been one important question which has caused more worry and deep study than any other, and that is the cost of operation. In the study of this subject one is impressed with the importance of every detail which added together makes the whole, so that in delving into the records of the past, those of us who are now striving to produce efficiency realize the necessity that each and every member of the profession should understand that his efforts and his labor are a part of the whole, and if the results of his labor are not up to the mark, then the whole will be handicapped by just that amount. So in the efficient operation of any ship, every person who has had a part in designing, in building and then in operating that ship is responsible for his part, and if each and every one has produced perfect results, then the result as a whole should be perfect.

In theory this is true, but in practice we find too many "exceptional conditions," which expression has been used to cover a multitude of blunders in the past as well as in the present. So in the study of this subject we must admit to ourselves that each of us is responsible for the results attained, and that on the blunders of the past we can erect a perfect organization for successful operation.

### Least Cost Spells Success

The history of shipping reveals many interesting events, and without spending too much time on the past, it is well to recall that supremacy of the seas has gradually changed from nation to nation since the beginning of water transportation until the present, and will continue to be fought out on economic lines until the end of time. In studying the cause of the gain or loss of the supremacy of the seas, it appears to be true that the nation which can build ships for less than others, and whose vessels can transport cargoes faster and cheaper than others, will rule the sea. Here again enters the "exceptional condition" in the form of government ownership and of government subsidy.

At the time of writing this article, there is an effort being made to place the merchant marine of the United States on an equal competitive basis with the merchant marine of other nations by the adoption of a ship subsidy. Those interested in the success of vessels under the American flag realize the necessity of this measure.

### Why Aid Is Necessary

First, on account of the higher first cost of the vessels built in the United States.

Second, the American merchant marine is the only important American industry not protected by tariff.

Third, to equalize the present unfair competition on account of the subsidy paid to the merchant marine by other nations in competition with the merchant marine of the United States.

Fourth, on account of protection to other industries the standard of living of its employes is raised to a higher level than the standard of living in any other country, and it is unfair to the seafaring profession to force them to a standard of living which would not be tolerated ashore.

Many critics of American shipping insist that Americans cannot operate ships. These gentlemen forget the records of the past, the most interesting of which is the era of the clipper ship, which era commences prior to the War of the Revolution and continues until just after the Civil War, when the era of steam vessels begins. The years between 1843 and 1869 are to all Americans who love the sea the most interesting, as during this time American shipbuilders constructed the finest models of sailing ships ever launched. With these ships the American shipmaster proved himself superior to any shipmaster in the world, and it is a matter of record how American clippers were loading in China ports at higher rates while vessels of other nations could not get cargoes in the same port at lower freight rates, owing to the difference of speed, and here it may be well to quote from "The Clipper Ship Era," by Captain Arthur H. Clark, published in 1910:

"Of the men who commanded the American clipper ships, it may be said that they carried the ensign of the United States to every quarter of the globe, with honor to their country and themselves. Each had his strongly marked traits of character and his human weaknesses. Nothing could be more remote from the truth than to imagine these men as blustering bullies at sea or rollicking shellbacks on shore; neither were they Chesterfields or carpet knights, afloat or ashore, not at all the type of skipper that one is apt to meet in works of fiction. Many of them might easily have been mistaken for prosperous merchants or professional men, until a more intimate acquaintance disclosed the aura of salted winds and surging seas, and a world-wide knowledge of men and cities. It may well be doubted whether braver, true-hearted gentlemen or finer seamen than many of the American clipper ship captains of half a century ago have ever sailed the seas."

### Americans Unmatched Then

When these men won the supremacy of merchant shipping for American vessels it was said of them in 1860 by a critic of the merchant marine of another nation: "We have no masters who can match the masters of American vessels, and until we do, and allow them full control of our vessels, we cannot compete successfully." Even in those early days it was thoroughly understood that the success or failure of the venture was solely in the hands of the master.

Succeeding the era of clipper ships is the era of steam, and as other nations built and operated steamships the American ensign gradually faded from the sea, and the year 1913 saw American shipping at its lowest mark.

The World War commenced in 1914 and naturally the demand for tonnage grew, and as the demand increased the rates soared. Since everything connected with the shipping interest follows closely the law of supply and demand, the operating cost during the war period attained such heights as to be unbelievable. During this period of inflated prices, as a defensive measure, America had constructed a large number of vessels, and when peace was declared America found herself in possession of one of the greatest merchant fleets the world had ever dreamed of. It then became a problem of how to make the best use of this fleet.

It is useless to attempt to conceal the fact that at this time there existed many steamship companies, whose organizers and officials knew little about the shipping business and less about the traditions and established customs of the sea. Wages soared, conditions afloat and ashore became impossible, operating costs were excessive, claims for cargo damage and loss were unreasonably high, and with the perfection of system of communication the status of the master and officers was reduced to practically that of a high priced office boy—obeying orders issued from ashore by those who were intoxicated by high freight rates and large profits, who thought more of the American dollar than they did of the safety of the vessel or its mark. However, as freight rates decreased, it was realized that steamship companies founded on inexperience could not endure, and it is to the credit of the profession to say that ability, experience and efficiency are being recognized and will eventually regain control.

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* Paper read at the thirtieth general meeting of the Society of Naval Architects and Marine Engineers, New York, November 8 and 9.

During the past two years, rates have fallen to the level of, and in some instances to a point lower than, pre-war rates, and in the struggle of American vessels for existence in the shipping world against the better competition of foreign vessels which enjoy a lower operating cost, as well as a government subsidy, American shipping has reached that stage where the cost of efficient operation means success or failure to our merchant marine as a whole.

### Three Vessels Compared

It is a fact that, among the various grades of ship officers, the American merchant marine can boast of having many who are efficient, but unfortunately many masters lack sufficient business training, due to the modern method in steamship offices where the master is not allowed to handle details with which he should be familiar, and naturally in this connection the shipowner is standing in his own light.

To establish a basis of comparison of the cost of operation for all classes of ships is an impossibility, and after considering the mass of data available it was decided that each vessel was an individual study.

Herewith are presented data of three vessels in trans-Atlantic trade, reduced to an average of one voyage and all expenses are included; total cost represented as 100 per cent:

| | Example A Per cent | Example B Per cent | Example C Per cent |
|---|---|---|---|
| Fuel | 23.6 | 29.9 | 27.9 |
| Stevedoring, tally, watching, clerks | 20.6 | 16.0 | 22.9 |
| Wages on ship | 11.2 | 14.4 | 13.0 |
| Insurance | 10.4 | 8.1 | 12.0 |
| Wharfage | 7.7 | 1.9 | 2.2 |
| Agency and brokerage | 4.9 | 3.4 | 2.7 |
| Grain fittings | 3.1 | 2.9 | ...... |
| Food for crew | 3.0 | 3.0 | 1.4 |
| Stores, deck department | 2.0 | 2.9 | 2.9 |
| Stores, engine department | 2.5 | 3.4 | 3.6 |
| Stores, steward department | 0.2 | 0.3 | 0.25 |
| Advertising | 2.4 | 0.4 | 0.3 |
| Towboats | 1.8 | 1.5 | 1.4 |
| Pilotage | 1.3 | 1.3 | 1.4 |
| Port charges | 1.4 | 1.8 | 1.6 |
| Repairs | 1.6 | 5.1 | 3.6 |
| Miscellaneous | 2.1 | 3.5 | 2.6 |
| Laundry | 0.2 | 0.2 | 0.25 |
| Total | 100 | 100 | 100 |

From a study of the above data one readily sees that fuel, cost of handling cargo, wages and insurance are the most important items of expense.

Fuel is the most important item of expense in operation and is a subject to which little intilligent study has been given, and while general results have been compared, very little satisfactory data are obtainable. The United States Shipping Board has just appointed a committee to study this subject; this committee is afforded a great opportunity to render service to the profession.

The prevailing practice today is to buy fuel on a price basis, and no consideration is given to the heat units contained therein nor to the subsequent results obtained.

In vessels using oil fuel, where this fuel is carried in double bottoms, sufficient attention has not been given to the arrangements for heating the fuel in the tanks, with the result that in cold weather considerable loss occurs. However, many interested in efficiency feel that the Shipping Board fuel committee will submit data and promulgate a set of rules of procedure which, if followed, will greatly improve results.

### Handling Cargo Second

Next in importance to fuel is the cost of handling cargo, which includes loading, checking, sorting, watching, and clerk hire on dock. Investigation revealed that the total actual cost per ton of general cargo handled in New York varied from $1.15 a ton to $1.65, and in the ports on the Atlantic Coast the range in cost per ton was from $0.92 to $2.15. One interesting example is as follows:

Cargo handled, 152.4 tons general.

| | |
|---|---|
| Stevedoring | $137.00 |
| Cooperage | 75.00 |
| Watching | 70.00 |
| Sorting and delivering | 284.00 |
| Total cost | $566.00 |

Average cost, $3.71 per ton.

One only need check up on a ship during the loading and discharging to realize where the money goes. This item alone, on an average, is one-fifth of the total expense and is seldom checked as to delays, waiting, overtime, etc. With proper supervision, even with the high rates of pay, this excessive rate per ton could be greatly reduced.

### Regarding Wages Afloat

Third in importance in operating cost of a vessel are wages afloat. So very much unbelievable data have been printed about this subject that great care was exercised to obtain only authentic data, and the rates of pay quoted on American vessels was taken from shipping articles which are on file in the commissioner's office. The rates of pay on foreign vessels were obtained from vessels in service and shipowners, and for the benefit of those who are interested the information is tabulated and herewith presented in the hope that it will speak for itself.

The standard of living in this country is so different from that in foreign countries that it is absolutely unfair to compare American wages with those of foreign vessels.

One of the most unfortunate lines of reasoning today is that by cutting wages one obtains efficiency. It matters not in what capacity a man is employed, if the wages for that rating are higher than the wages for the same ratings in other lines, then the most efficient man will be found for the place.

Perhaps the reader may find in the scale of wages herewith presented sufficient explanation as to why the native-born American does not adopt the profession of the sea.

Much could be written about the subject of insurance—all classes—but it would not influence the pre-

WAGE SCALE EFFECTED ON JULY 1, 1922.

| | U.S.S.B. scale | A.S.O.A. scale | Private owned American Actually paid | | British | | German | | Danish | | Swedish | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | £ | $4.40 | Marks | 400 to $ | Krone | 1 krone 21½¢ | Krona | 1 krona 25½¢ |
| Master | $270.00 | $275.00 | ...... | ...... | £45 | $198.00 | 6,000 | $15.00 | . .. | ...... | .... | ....... |
| 1st mate | 165.00 | 165.00 | $150.00 | $150.00 | 21–10 | 94.60 | 4,200 | 10.50 | 750 | $161.25 | 600 | $153.00 |
| 2nd mate | 145.00 | 140.00 | 125.00 | 115.00 | 16 | 70.40 | 3,800 | 9.50 | 625 | 134.38 | 420 | 107.10 |
| 3rd mate | 130.00 | 125.00 | 100.00 | 95.00 | 13 | 57.20 | 3,425 | 8.55 | 450 | 96.75 | 380 | 96.90 |
| Wireless | 90.00 | 90.00 | 90.00 | 80.00 | 13–10 | 59.40 | ..... | ...... | .... | ...... | .... | ...... |
| Carpenter | 70.00 | 70.00 | 45.00 | 40.00 | 12–10 | 55.00 | 2,750 | 6.90 | 345 | 74.18 | 300 | 76.50 |
| Boatswain | 65.00 | ...... | 45.00 | 40.00 | 11–10 | 50.60 | 2,750 | 6.90 | 345 | 74.18 | 300 | 76.50 |
| A. B. seaman | 55.00 | 47.50 | 35.00 | 35.00 | 10 | 44.00 | 2,600 | 6.50 | 316 | 67.94 | 275 | 70.13 |
| Ordinary seaman | 40.00 | 35.00 | 25.00 | 30.00 | 5–10 | 24.20 | 1,200 | 3.00 | 200 | 43.00 | 180 | 45.90 |
| Chief engineer | 240.00 | 250.00 | 240.00 | 225.00 | 24–10 | 107.80 | 5,500 | 13.75 | 1100 | 236.50 | 430 | 109.65 |
| 1st assistant engineer | 165.00 | 165.00 | 150.00 | 150.00 | 20–10 | 90.20 | 4,200 | 10.50 | 850 | 182.75 | 400 | 102.00 |
| 2nd assistant engineer | 145.00 | 140.00 | 125.00 | 115.00 | 16 | 70.40 | 3,800 | 9.50 | 650 | 139.75 | 350 | 89.25 |
| 3rd assistant engineer | 130.00 | 125.00 | 100.00 | 95.00 | 13 | 57.20 | 3,425 | 8.55 | 575 | 123.63 | 285 | 72.68 |
| Deck engineer | 70.00 | 70.00 | 45.00 | ...... | 11–10 | 50.60 | ...... | ...... | .... | ...... | .... | ....... |
| Oiler | 65.00 | 55.00 | 40.00 | 42.50 | 11 | 48.40 | 2,750 | 6.90 | 450 | 96.75 | 290 | 73.95 |
| Fireman (oil) | 57.50 | 50.00 | 35.00 | ...... | ..... | ...... | ..... | ...... | .... | ...... | .... | ...... |
| Fireman (coal) | ...... | 50.00 | ...... | 40.00 | 10–10 | 46.20 | 2,650 | 6.62 | 322 | 69.23 | 275 | 70.13 |
| Wiper | 50.00 | 35.00 | 25.00 | ...... | ..... | ...... | ..... | ...... | .... | ...... | .... | ...... |
| Coalpasser | ...... | 40.00 | ...... | 35.00 | 10 | 44.00 | 2,400 | 6.00 | 215 | 46.23 | .... | ...... |
| Steward | 105.00 | 105.00 | 100.00 | 90.00 | 14–10 | 63.80 | 2,600 | 6.50 | 530 | 113.95 | 350 | 89.25 |
| Cook | 90.00 | 90.00 | 80.00 | 75.00 | 13–10 | 59.40 | 2,850 | 7.12 | 450 | 96.75 | 325 | 82.88 |
| Baker | 70.00 | 70.00 | 45.00 | 60.00 | 9–10 | 41.80 | 2,440 | 6.10 | 230 | 49.45 | .... | ...... |
| Messman | 35.00 | 35.00 | 35.00 | 40.00 | 8–10 | 37.40 | 2,440 | 6.10 | 90 | 19.35 | 80 | 20.40 |
| Messboy | 35.00 | 35.00 | 35.00 | 35.00 | ..... | ...... | 1,525 | 3.81 | .... | ...... | .... | ...... |

vailing opinion of those who should know the subject fairly well. Any discussion on this subject can be summed up by saying that when loss and damage are high the rate is high and when loss and damage are low the rate is low. This cost could be reduced by bonus to ships' officers and self-insurance.

The remaining items which enter into the cost of operation are either unavoidable or under the supervision of the personnel afloat, and if care has been exercised to select only efficient officers it naturally follows that they will produce efficient results.

The question of subsistence, while not very large in total cost, is most important in having satisfied personnel afloat, and sufficient care should be exercised to see that food is properly prepared and made appetizing instead of all too common practice of serving improperly prepared and unpalatable food.

### The U. S. S. B. 65 Cent Rate

The Shipping Board has recently placed a limit on the cost of feeding of 65 cents per man per day. My experience is that this is a generous allowance, provided that it is judiciously expended.

In the matter of deck and engine stores it would be well to work out an annual schedule of allowances and requirements. In discussing this subject with one of the profession, I found that he had worked up data for a company covering its fleet of quite a number of vessels, and on an average the figures of cost allowance check very close for requirements. For example, a vessel of the 7500 to 9000 deadweight tons class was allowed: Deck department, $17.30 per day; engine department, $19.15 per day; steward sundries, $5.25 per day.

In comparing these figures with those of actual operation, they were found to be rather generous, and it only confirms the opinion that in these departments, with a fixed schedule, the former excessive cost can be reduced to a minimum.

### Present the Time to Act

Taken as a whole, one is impressed with the manner in which shipping is handled since the days of the World War, and while in many cases there is too much misdirected energy, the members of the profession realize that the time has arrived to establish the American merchant marine on a clean, efficient business basis, and to regulate the operating cost so that it will be on a par with international competition.

From a study of the data available, the writer is of the opinion that American ships can be made efficient, and excepting the excessive first cost, depreciation and overhead expense, can hold their own against any competition. To accomplish this result there should be closer relations between the executives of companies and the masters of their vessels. Masters should be selected for their efficiency and given authority over the operation of their vessels. Chief engineers should be selected likewise and given absolute authority over their own department. The master should be furnished with complete cost data so that he can remedy high cost over which he has control and show the owner the excessive cost over which he has no control.

Managers and marine superintendents should be men who have served as master of a vessel. Superintending engineers should be men who have served as chief engineer of a vessel. Everything concerning the handling and stowage of cargo should be subject to the approval of the master of the vessel. If the master is to be held responsible, he should be given full authority regarding all details.

# THE SHIPOWNER ON THE HAGUE RULES

## American Steamship Owners' Association Sets Forth its Views in Full in Memorandum Handed to the American Delegates

IN an article on "The Hague Rules Revisions," published in the November issue of Pacific Marine Review, the statement was made that, at a hearing held by the Shipping Board to consider the proposed Rules for the Carriage of Goods by Sea, almost nothing was said on behalf of shipowners. Prior to the departure of American delegates for Europe, however, the attitude of American shipping operators was set forth fully in a statement issued by the American Steamship Owners' Association, which, with a revision proposed by the association, was placed in the hands of Charles M. Hough and Norman B. Beecher, United States delegates to the London and Brussels conferences. The statement of the American Steamship Owners' Association follows:

In a statement to its member companies the American Steamship Owners' Association, H. H. Raymond, president, 11 Broadway, New York, expresses its opinion of the proposed Hague Rules for international uniform bills of lading as follows:

The American Steamship Owners' Association endorses the principle of having uniform bills of lading covering the carriage of goods by sea in international trade, providing that such bills of lading do not impose burdens which will prove further obstacles to the development and maintenance of an American merchant marine. However, the burdens imposed upon carriers by the so-called Revised Hague Rules are such as to make impossible their approval by the association under existing conditions in shipping. After most careful consideration, in which the respective positions of shipper, cargo underwriter and carrier have been weighed, the association is forced to the conclusion that the Revised Hague Rules are particularly unjust and unreasonable as respects the burden of proof in the case of concealed losses and the requirements as to notice of claim and institution of suit.

### Points of Difference

The association through its counsel, Mr. Ira A. Campbell, has prepared a proposed set of rules which it believes fairly and justly distributes the risks necessarily incident to the carriage of goods by sea. These rules differ from the so-called Revised Hague Rules, principally in the following particulars:

The Revised Hague Rules require the carrier to show upon the bill of lading the apparent order and condition of the goods as received, and make the bill of lading prima facie evidence thereof. As the carrier is required properly and carefully to handle, load, stow, carry, keep, care for, unload and deliver the goods, the effect is to impose upon the carrier liability for external damage to the goods. The carrier cannot escape liability for concealed losses and damages, i. e., losses or damages to the contents of packages, unless it shows that neither its actual fault or privity, nor the fault or neglect of its agents, servants, or employes contributed to the loss or damage. The result will be that however diligent the carrier may have been in his efforts properly to handle, load, stow, carry, keep, care for, unload and deliver the cargo, it cannot, under these rules, escape liability unless it proves the cause of the loss and shows that it was not caused by the negligence of its employes. It is particularly this burden against which the shipowners complain as being unjust and unreasonable, and which the proposed rules of the association somewhat modify.

It is well known that it is impossible always to ascertain the causes of many losses and damages to cargo, especially with respect to the contents of packages. It is utterly impossible for the carrier to open all packages received for shipment and ascertain the nature and condition of the contents. Shipments arrive at the loading dock of the ocean steamship from points in the interior, by rail, motor or lighter, and manifestly it is impracticable to determine the nature and condition of the contents of the packages, or whether there has already been a theft from the packages prior to their receipt by the steamship company. Similarly, it is impossible for the carrier to exercise control over and guard the packages after delivery from the ship and until they have reached the warehouses of the consignee. It is doubtless equally impracticable for the consignee to open each package as received from the ship, and yet from the time the packages are discharged from the ship until they reach a place where they can be inspected by the consignee, they pass through many hands and are subjected to varying conditions on lighters, in warehouses, and in custom houses, where losses and damages may easily and do occur. When, therefore, a case of goods is shipped from an interior point, it may, when it reaches the hands of the ultimate consignee at a foreign port, have suffered a loss or damage to its contents from a cause which can never be ascertained. Such loss or damage the association regards as a proper subject for insurance, and is customarily insured by shippers. To impose upon the shipowner the burden of showing that such loss was without his fault or privity, or without the fault or neglect of his agents, servants or employes, as do the Revised Hague Rules, would have the practical result of imposing the burden of the loss upon the shipowner, unless he could show how and where it occurred.

This burden is enhanced under the Revised Hague Rules by not requiring the giving of any notice of claim of damage, and by permitting suit to be brought two years after the date of the delivery of the goods or the date when the goods should have been delivered. The rules make the removal of the goods prima facie evidence of the delivery by the carrier of the goods as described in the bill of lading, but the failure to give notice does not prevent the institution of suit within two years. The practical result will be that the shipowner will be faced with suits long after delivery, without any previous notice of claim, and under the evidence adduced by the shipper or consignee will not be able to escape liability for concealed damage, unless he can show how and where the loss occurred. The labor which the shipowner is compelled to employ, particularly seamen, is transient in character, so that it is very easy to conceive that under the rules he will be unable to obtain evidence of the cause of the damage, which might have been available to him if he had known of the loss within a reasonable time after the delivery of the goods.

### Double Insurance Premium

These losses are customarily insured, and the effect of transferring an unescapable liability to the shipowner will simply mean that the cargo underwriter will recoup its loss from the shipowner. Manifestly, the carrier cannot afford to carry the risks uninsured, and it will, therefore, cover itself by insuring in protection and indemnity associations, and if competition makes it possible, will add the premium to the freight. This in the end would result in a double insurance premium being paid for one risk, first by the shipper or consignee, and secondly by the shipowner, and ultimately the consumer through increased freight. The real beneficiary will be the cargo underwriter, who receives the premium and recoups his loss from the second underwriter. In the judgment of the association this is uneconomical and unsound.

### Due Diligence; Then Exemption

It is particularly to modify these burdens that the rules proposed by the association have been drafted. The underlying principle of the association's rules is that the carrier should be required to exercise due diligence not only to make its ship seaworthy at the beginning of the voyage, but also in the loading, stowing, carrying, keeping, caring for, unloading and delivery of the cargo.

Having exercised, however, due diligence to make the ship seaworthy, and having so proved affirmatively, the carrier is exempted from liability for loss or damage arising from unseaworthiness, latent defects, and any act of neglect or default of the master, mariner, pilot or servants of the carrier in the navigation or management of the ship, perils, dangers and accidents of the sea and other navigable waters, and fire on board the ship. As respects unseaworthiness, this is the same burden as results from the Revised Hague Rules, but as to the other classes of losses, it increases the burdens upon the carrier as a condition precedent to exemption from liability, as compared with those under the Revised Hague Rules, in that due diligence to make the ship seaworthy must first be shown.

### "Unknown" Contents Provision

There are certain causes of loss beyond the control of the carrier, for which it should not be held responsible in any event. The proposed rules, as do the Revised Hague Rules, exempt the carrier from liability for losses resulting from an act of war, act of public enemies, arrest or restraint of princes, rulers and peoples, etc.

Under the proposed rules, however, if the carrier has no reasonable opportunity of ascertaining the quantity, weight, nature or condition of the contents of packages, or in the case of bulk cargo, the number of pieces, quantity or weight, the same may be designated on the bill of lading as "unknown," or as "said to contain (specifying nature, condition, quantity or weight)," or with other appropriate qualifying designation. Having made such designation upon the bill of lading, then, under the proposed rules, the carrier is to be relieved from liability for loss or damage to the contents of the packages, if it has exercised due diligence properly and carefully to load, stow, carry, keep, care for, unload and deliver the cargo, and proves that fact affirmatively.

Similarly, in the case of bulk cargo, if the bill of lading contains the qualified designation as respects the number of pieces, quantity or weight, it shall be proof of delivery of all the cargo received, and fulfills the obligations of the carrier in respect thereto. The practical result of these rules in the case of concealed damages, the causes of which cannot be ascertained, will be to relieve the carrier from liability upon its showing that it exercised due diligence properly and carefully to load, etc., and deliver the cargo.

If it be shown that the damage resulted from negligence of the employes of the carrier, it will fail in establishing the exercise of the required diligence, and thus the practical result will be that the carrier will only be relieved from liability in the case of concealed and unascertainable losses. Thus the proposed rules leave the burden of the loss where it should fall in the latter class of losses, namely upon the cargo underwriter for which it has received a premium. At the same time, it places the shipper, consignee and cargo underwriter in a distinctly more favorable position than they enjoy under the law and practice today, because the burden in the first instance will be upon the carrier to show the exercise of the diligence, a condition precedent to its right to exemption from liability.

The association believes that this is a fair distribution of responsibility, because it leaves the loss, the cause of which is unascertainable, as an insurable risk upon the cargo underwriter, where one insurance and one premium will suffice, instead of transferring it to a protection and indemnity association, in which event there will be two insurances and two premiums for the one risk.

The proposed rules also are made applicable to common carriers, thus leaving freedom of contract where a shipper engages the entire carrying capacity of the ship.

### Varying Conditions of Handling

The association regards it as impracticable to provide uniform rules which will anticipate all of the varying conditions in the different ports of the world, as respects the handling of the goods prior to loading and subsequent to discharge from the ship. So the rules must be confined to the carriage of the goods from the time they are loaded on to the ship until they are delivered from the ship, as is now proposed in the Revised Hague Rules. To make the scope of the proposed rules clear, however, they provide that the delivery shall be deemed completed when the goods have been delivered by the ship to any connecting carrier, or discharged on to lighters, wharves or into warehouses or other proper places of discharge in accordance with the custom at the port or place of discharge.

The Revised Hague Rules increase the valuation per package to £100, whereas the proposed association rules reduce the latter to £50. The average value per unit in sea carriage is less than $100, and as the value per package is an important factor in the making of freight rates, the effect of increasing the value per package will be to impose an unjust burden upon the shipper of the lower valued packages, through an increase in freight. The association, therefore, believes that the value of £50 per package comes nearer to a fair and proper valuation, and yet it is a reasonable advance over the limitations now customary in bills of lading.

### Regarding Notice of Claim

The proposed rules also materially change the requirements as to notice of claim and institution of suit. They provide that notice of loss or damage to the goods must be given within sixty days after delivery, unless such period is shown under the special circumstances of the case to be unreasonable, and then within a reasonable time after delivery, except that notice of an apparent loss or damage must be given, notation thereof on the receipt being sufficient. Written claim for damage must be filed with the carrier within six months following the written notice, and no suit can be maintained unless instituted within one year after the giving of the written notice. This affords the shipper and consignee every reasonable opportunity of making claim and commencing suit, and yet relieves the carrier from the injustice of the Revised Hague Rules, which permit suit at any time within two years without previous notice of a claim.

The proposed rules also include the so-called "Jason clause," providing for a contribution in general average even though the loss results from unseaworthiness, latent defects, or negligence in the management or navigation of the ship, provided that due diligence be exercised to make her seaworthy. This clause is the one which was upheld as valid by the United States Supreme Court in the Jason case, and is customarily inserted in all bills of lading today.

Save for other minor changes in structure, phrasing, etc., the foregoing analysis shows substantially the changes which the new proposed rules make in the Revised Hague Rules.

### Undue Burden on Americans

The burdens which the Revised Hague Rules impose upon the shipowner can, of course, be insured against with protection and indemnity associations. American shipowners cannot afford to carry the risks without insurance, and there is only one source from which the increased expense can be obtained, namely, freight. If it were possible to increase the freights correspondingly, then the burden would be passed to the ultimate consumer. But this is impossible under existing competitive conditions. If the American shipowner were able to operate his ship at a profit, as are our foreign competitors, the inability to increase the freight rates would simply mean a reduction in profits. Yet the fact is that American shipowners are under such greater costs of operating as compared with those of other nationalities that there is no hope of establishing and maintaining an American merchant marine without the assistance of a subsidy. This has been established by the hearings which the congressional committees have been holding, and is demonstrated by the strenuous efforts being made by the present administration to pass the Ship Subsidy Bill.

Until conditions in the shipping business, therefore, change, and until American ships can be operated on a parity with those of other nations, any increase in the cost of operating American ships will be but a further handicap to the development of American shipping.

It is true that if bills of lading containing the Revised Hague Rules were adopted by all the nations, the burden would fall equally on all shipowners, provided, of course, that American shipowners could obtain protection and indemnity insurance as cheaply as the foreign shipowners. But this is delusive, because, while the increased burden to the shipowners, if not transferable to the shippers through increase in freights, may result in reducing the profits of the foreign shipowners, its effect upon the American shipowners will be to increase their losses, and thus necessitate greater government aid, or make more certain the impossibility of ever establishing and maintaining an adequate American merchant marine.

It is to meet this situation that the rules proposed by the association have been drafted, and it is believed that a careful analysis of them and a due regard for their effect will establish conclusively the fairness with which they distribute the responsibilities of carriage by sea as between shipper, cargo underwriter, and shipowner.

(Editor's note: The proposed rules of the American Steamship Owners' Association are not published herewith, inasmuch as the preceding discussion explains the departures from the Revised Hague Rules in much detail.)

## BOARD'S POLICY REGARDING TRANSFERS

REAR ADMIRAL W. S. BENSON, commissioner of the Shipping Board, has made public the policy of the board with reference to the transfer of American vessels to foreign flags. In a decision of the Shipping Board on the second application of the Standard Oil Company of New Jersey for the approval of the transfer of a number of barges, previously documented under the laws of the United States, to the Mexican flag, the barges having been sold by the Standard Oil Company to the Cia Transcontinental de Petrolee, a Mexican company, the decision says:

"Applications are presented from time to time for the approval of transfers of vessels to foreign flags, after the transfer has been made; sometimes this default in first obtaining the approval is due to ignorance of the law, which of course does not excuse the omission.

"In the present group of cases the consent of the board was obtained, but the transfers were not made within the time limit fixed by the order; instead of first applying to the board for an extension of time, which might, in a proper case, be granted, the provisions of the order were ignored and the transfers were made, notwithstanding.

"The requirement that transfers of American vessels to foreign flags shall be made, except with the previous consent of the Shipping Board, is an important factor in the development of our merchant marine, and will be strictly enforced by the board. We look with great disfavor on applications being postponed until after the event, and steps will be taken to require the payment of a fine or penalty as the condition on which any such approval-after-the-event is given; it will not be given on any terms unless the equities are very strongly in favor of the applicant; in other cases the forfeiture and other penalties prescribed by law will be applied.

"In the present case, the party selling applied to and obtained the consent of the board, in due course; the delay in the transfer was on the part of the foreign buyers. The good faith of the seller was further shown in his having brought the default to the attention of the board; however, we think the seller is not entirely free from responsibility. When transfer to a foreign flag is contemplated on the sale of a vessel, and the approval of such transfer has been given, the transfer of title and transfer of flag can be effected concurrently, and the seller should also give it his attention.

"Under the circumstances, the default will be corrected; not, however, by the issue of new orders of approval, but by an order based on the original application, extending the time limit therein named to and including the date of the actual transfer, and as thus extended confirming the approval of the transfer."

In the case mentioned, the Standard Oil Company having sold the barges involved to the Cia Transcontinental de Petrolee, applied to the board and obtained its consent to their transfer to the Mexican flag, and with the full bill of sale turned over to the foreign company the consents mentioned, with instructions that they were necessary before the transfers could be made. The orders of approval contained express limitations of time within which the transfer was to be made, and the foreign company neglected to complete the transfers within the period of the limitation. The second application, in which the decision above mentioned has been made, was a second request of the board for the approval of the transfer.

# NAVAL ARCHITECTS AND MARINE ENGINEERS

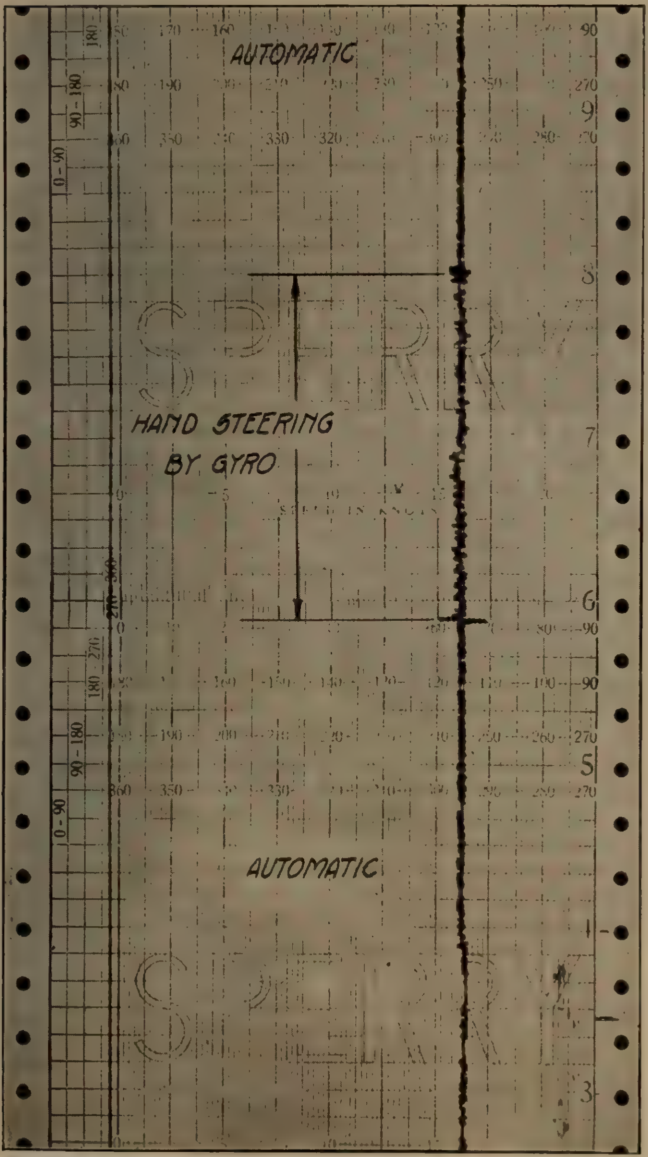
## Abstracts of Some of the Papers Read at the Annual Meeting of the Society Held in New York City, November 8th and 9th

AT the thirtieth general meeting of the Society of Naval Architects and Marine Engineers held in New York November 8 and 9, a number of interesting papers were read. Two of these are reproduced in full in this issue. Abstracts of some of the more interesting of the other addresses follow:

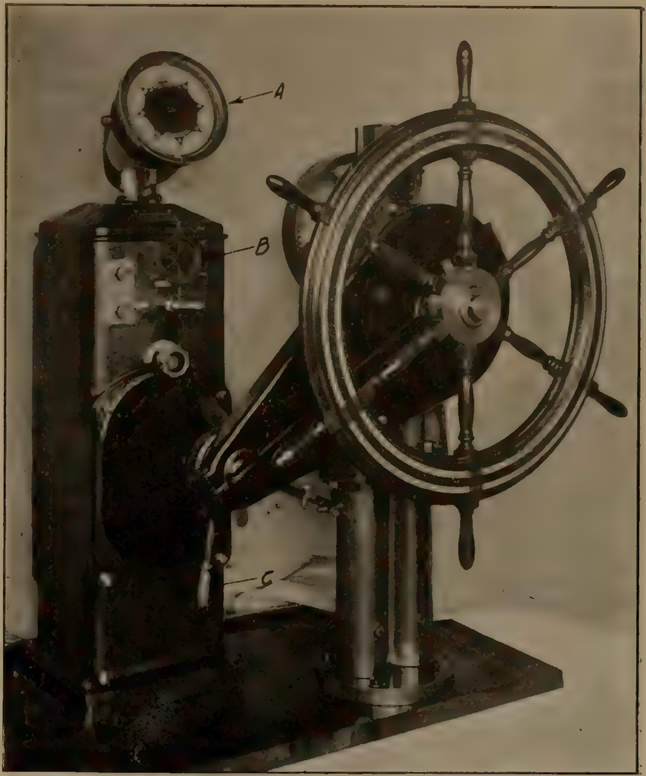
### AUTOMATIC STEERING, ELMER A. SPERRY, E. D.

Many attempts have been made to work out a theoretical design for an "iron quartermaster" that would be free from the personal equation of the human steersman. It has always been a matter of record that no two quartermasters have ever been able to get exactly the same results out of the same ship on account of the fact that no two quartermasters ever have the same "anticipation" in steering.

In shifting from the magnetic compass to the gyro compass it has very often been found that a given ship in the hands of the same quartermaster steers much more efficiently under the same conditions. This fact is due to the remarkable sensitiveness of the gyro to very slight angles of deviation from the set course. The main factors that influence necessary angle of helm and yaw in a ship are, first the general characteristics of the hull, especially as to afterbody run and location of propellers; second, the general characteristics of the rudder used; and three, the conditions of loading. Steering is, of course, influenced by factors outside of the ship, such as current tides and tide rips, waves and wind.



Record from Sperry course recorder, showing automatic steering by Sperry mechanical helmsman as compared with hand steering



The Sperry automatic steering device

The only object in perfecting an automatic steering device is the suppression of helm to a minimum. In one investigation described in this paper, it was found that on a certain ship, when steering by magnetic compass, an average of 6 degrees of helm was necessary to keep the ship on her course. This would mean a resistance to the forward motion of the ship equal to 9300 pounds. Steering this same vessel by gyro compass the average angle in the helm was reduced to 1.93 degrees, which is equivalent to a resistance of only 3000 pounds. This simple example makes very plain how important it is to secure minimum angle of helm for a given ship on a given course.

The paper by Dr. Sperry describes the manner in which the gyro compass repeaters are fitted up with an electrical apparatus for automatic steering. One form of this apparatus is represented in the illustration herewith. Referring to this illustration, A is the gyro compass repeater, B is a small tiller wheel by which all changes of course are set when using the automatic steering device, C is the handle for throwing the automatic steering device into or out of connection with the steering wheel and telemotor. Any standard telemotor can be used with this apparatus. The other illustration shows a record from the course recorder showing a comparison between automatic steering and a high grade of hand steering with gyro compass.

A number of these automatic steering units have been installed on merchant vessels, and Dr. Sperry's paper deals particularly with the records taken on one such installation on the Standard Oil tanker John B. Archbold. The paper is illustrated with a number of plates showing the records of various types of steering reproduced on the course recorders and illustrations showing various types of automatic helmsman installations.

## STANDARDIZATION IN THE AMERICAN SHIPBUILDING INDUSTRY, BY E. H. RIGG.

The question facing attempts at standardization is not whether we shall standardize but to what extent shall we carry out standardization. All shipyards standardize to a certain extent and are assisted by many national bodies, such as the Federal Bureau of Standards, American Bureau of Shipping, United States Steamboat Inspection Service, American Society for Testing Materials, American Engineering Standards Committee, and the Treasury and Navy Departments.

Taking first standard ship design, the situation would appear to be as follows: "In emergencies when large numbers of ships are wanted in a hurry by all means build to a standardized design. When all are building in one yard this holds absolutely. When building in separate yards it holds in general, each yard being allowed to adhere to its own general standards of detail."

Main and auxiliary machinery should be common to all ships of a type and interchangeable from ship to ship.

A large amount of work has been done along standardization lines in the field of international agreements on such matters as rules for avoiding collisions, signal codes, tonnage laws, life boats and supervision of passenger ships. Working agreements to a classification assist also toward broad-gauge standardization. Other steps toward this end are the regulations for standard loadlines and the international agreements for recognition of inspection certificates covering passenger and crew accommodations.

Under the second branch of this subject (standardization of materials entering into ship construction) there has been much progress to record and there is still much room for study. Merchant shipping today is to all "practical intents and purposes universally constructed of steel." Before the war efforts were under way for international specifications for ship steel and, "given a willingness to co-operate, it should not be impracticable to draw specifications broad enough to cover a merchantable article satisfactory for use the world over." As between America and Great Britain, considerable progress was made during the war toward standard roll sections and there should be further progress toward the ideal already accomplished in Britain where the one set of standards for bridges, buildings and ships obtains. Australia, Belgium and France have been falling into line on this roll steel standard since the war.

This same agreement on standards for ship materials should be extended to what might be termed "secondary ship materials, such as brass, bronze, iron and wood."

The next branch of the subject brings us to standardized method. Here considerable care must be exercised before adopting changes in the established methods of handling work, but in each yard at least a well defined, clearly thought out standard of procedure should be established.

The fourth department of the subject brings us to standard details and fittings. These in the past have been largely up to the yard and the shipowner. In Britain they have recently decided that fittings and equipment could be nationally standardized and they are doing it with great detail from manholes, doors, davits, sanitary fittings and deck auxiliaries down to the cups and saucers in the galley pantry. This British experiment will be well worth watching, as both time and money can be easily saved through the use of standardized fittings and equipment.

The fifth section deals with standard machinery and the plaint is set up that having just arrived at standard specifications for the moderate-powered reciprocating - engine, Scotch - boilered cargo boats, we are now faced with a great upheaval in the methods of compulsion. Diesel drives, diesel electric drives, electric, hydraulic or mechanical reduction-gear drives, direct turbine drives, and water-tube boilers seem to have arrived for the merchant ship. The diesel engine, however, lends itself very readily to elaborate standardization with its uniform power per cylinder. The electrical machinery necessary for electrical drives is already highly standardized, so that the problem of standardization of propelling machinery is comparatively simple.

The advantages in general of standardization are perhaps best seen in the greater possibility and economy of turn-around in price through standardized repair parts.

## MACHINERY AND TRIALS OF PASSENGER SHIPS OF THE AMERICAN LEGION CLASS, BY ROBERT WARRINER.

This paper gives in a general way the specifications of the Shipping Board passenger vessels of the 535-foot type built by the Newport News Shipbuilding & Drydock Company, the New York Shipbuilding Corporation, and the Sparrows Point Plant of the Bethlehem Shipbuilding Corporation, and describes in considerable detail the machinery of the President Pierce, which had compound turbines of a total shaft horsepower of 12,000, driving two propeller shafts through single-reduction gears. Steam for these turbines is provided by eight water-tube boilers of Yarrow type with a total heating surface of 40,000 square feet and a total superheating surface of 5000 square feet. These boilers are oil fired with Dahl mechanical burners on natural draft. The paper is illustrated with plates showing the arrangement of the machinery with full details of the propellers and has attached a table of auxiliary machinery showing full details of pumps and all other engine room and deck steam users.

Six-hour runs were made on these trials at approximately 7000 and 10,000 shaft horsepower and a ten-hour run at full horsepower, and the steam consumption was measured for the whole time. The water rate at 13,033 shaft horsepower was 10.70. The economy trials show the following results:

| Speed in Knots | Total Horsepower | Consumption of Oil in lbs. per hour | Consumption of Oil in lbs. per SHP |
|---|---|---|---|
| 11.862 | 2,814 | 7,590 | 2.7 |
| 14.641 | 5,627 | 8,800 | 1.6 |
| 16.897 | 9,096 | 11,700 | 1.3 |
| 18.540 | 12,126 | 13,400 | 1.1 |
| 18.23 | 11,856 | 12,780 | 1.08 |
| 18.43 | 12,035 | 13,150 | 1.09 |

### STRESSES ON VESSELS OF THE GREAT LAKES DUE TO WAVES, BY PROFESSOR HERBERT C. SADLER AND PROFESSOR LIND BLAD.

This paper is the result of the work of its two authors in a mathematical investigation for the committee on bulkheads and freeboard, who were considering the possibility of including Great Lakes vessels in an assignment of standard load-lines. Data as to lengths and types of waves were gathered from captains of vessels who had been previously instructed on the observation and report of wave phenomena. From this data it was concluded that waves over 250 feet in length are rarely encountered and the highest do not exceed 20 feet as a maximum. The paper calculates the stresses made by a series of hypothetical waves on a number of chosen types of vessels and is illustrated by a number of figures and plates showing wave profiles and positions of maximum bending moment for all of the chosen cases and by curves showing the details of shearing force.

### THE STUDY OF WAKE BY CURRENT METER, BY PROFESSOR E. M. BRAGG.

This paper gives the results of experiments by Professor Bragg in testing wake values by means of a current meter, using in the experiments a large variety of models. The results are for comparative purposes only and so far as designs are concerned are only indicative. The author feels that his experiments warrant the statement that "any complete system for determining values must take account of the following conditions: (1) Diameter of the screw relative to the draft of the hull, (2) the draft of the motor relative to the breadth of the motor, (3) the fore and aft position of the propeller, (4) transverse position of the propeller, (5) the vertical position of the propeller relative to the keel, and (6) the prismatic coefficient."

### DYSON'S METHOD FOR PROPELLERS OF OCEAN-GOING MERCHANT VESSELS, BY E. A. STEVENS, JR.

Many designers have held that Dyson's method, so successful in naval vessels, was not applicable to merchant ships with full lines and single screw. Several ships of this latter type and other types of merchant vessels are analyzed by Dyson's method and the actual results in trial ships shown in comparison. Almost every type of sea-going merchant ship is represented in the various problems. The first seven are single-screw ships, mostly with full lines and having block co-efficients over 0.77; 8, 9 and 10 are slow cargo and passenger type fitted with twin screw; 11 is a moderate speed cargo and passenger ship; 13 is a full type cargo ship with twin screws; 12 and 14 are high-speed passenger vessels. While there are in some cases considerable differences in the horsepower there is sufficient substantial agreement both in the horsepower and the revolutions between the trial data and the theoretical analysis by the Dyson method to warrant the assumption that when properly used this method would give very fair results for vessels of practically any type.

### PROPELLER POSITION AND PROPULSION EFFICIENCY, BY REAR ADMIRAL D. W. TAYLOR, U. S. N.

In dealing with actual ships, reactions between ship and propeller are complicated phenomena. Of the many features involved in these phenomena those in location of propeller are most in need of systematic investigation. The experiments that are the subjects of this paper deal with a question of the location of propeller for a single-screw low speed vessel. Three model propellers were used, all of which were smaller than would be used for the actual ship in practice and so permitted maximum change of vertical position. This insured a high real slip and that the experiments would cover a large variation of slip. It was found that the higher the vertical position of the propeller the greater the hull efficiency and the possible efficiency of propulsion, which of course places the naval architect before another opportunity to compromise between conflicting tendencies. Practically all considerations in the majority of vessels, with the exception of motor efficiency, take the lowest practicable position of the propeller, and certainly in considering vessels with reciprocating engines the propeller will always be placed at the position of maximum submergence. This paper is accompanied by diagrams showing the lines of model used, the model propellers, positions of propellers and curves showing results of the various controls.

### GASOLINE FIRE BOAT, BY A. D. STEVENS.

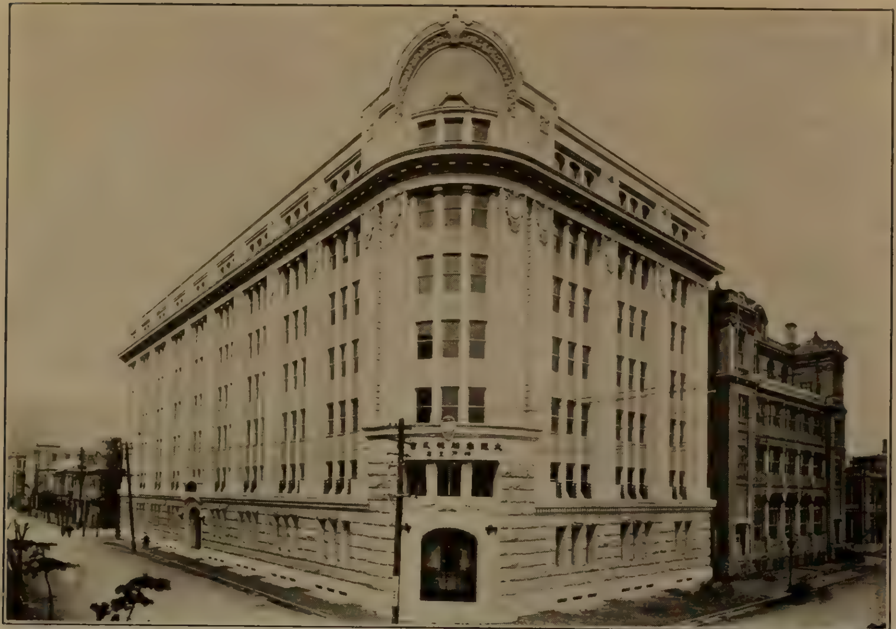
This paper describes in considerable detail the fire boat recently designed and built for the city of Jacksonville, Florida, under the supervision of Mr. Stevens. The boat is a converted sub-chaser. The plan adopted for the conversion was to build up the hull three feet for fifty feet of the midship's length, using all steel construction in this superstructure. Everything was cut away in this 50-foot space clear to the skin of the hull and an inside facing strake put on that formed with the water-way and shear strake a complete box girder. Steel angle frames were mortised through the water-way at every other frame and were extended down 30 inches and bolted both to the frame and to the outer planking. This gave a 24-inch spacing for the steel frames of the superstructure. One-quarter inch steel side plates were used and these were extended six feet beyond the bulkhead at each end and fastened with lag screws through a 2½-inch by 2½-inch bounding angle. Six-inch channels were used for deck beams and an all-steel pilot house with a little lighter scantling was built at the forward end.

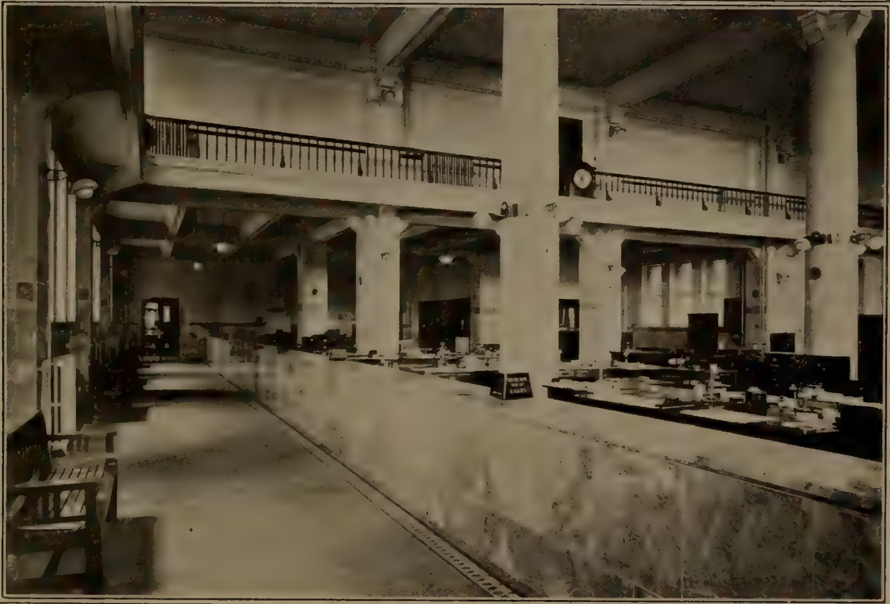
Of this 50-foot machinery space 20 feet was taken up by the propelling machinery, which was left undisturbed except for the removal of the central engine with its shaft and wheel. In the forward 30 feet of machinery space were installed four 8-inch 3-stage de Leval centrifugal fire pumps, each directly connected to a 300 horsepower "G. R. C." type Sterling 8-cylinder motor. These units are arranged two on each side and with the pumps in the center of each pair. Pumps take their suction from a common 10-inch supply pipe connected with four 10-inch seacocks.

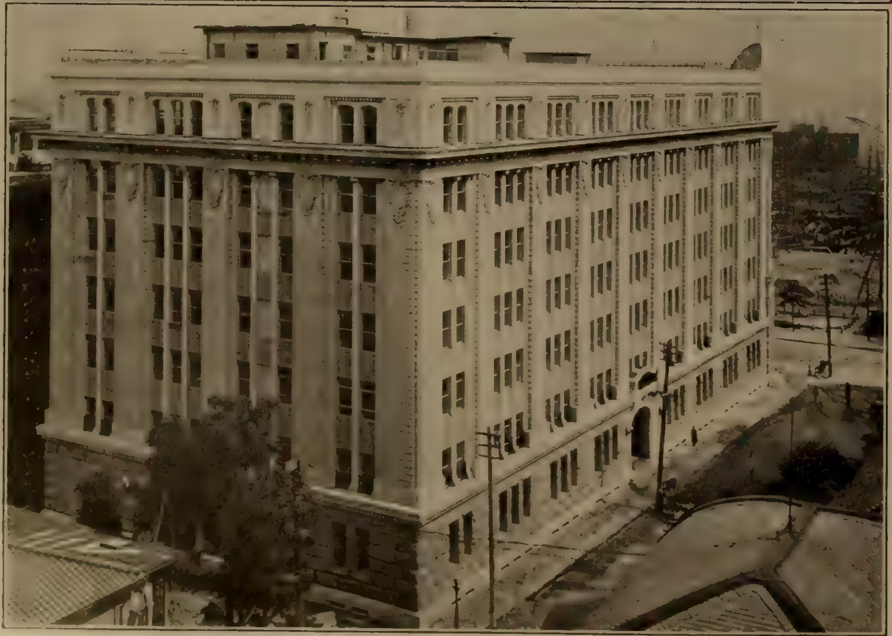
Discharge connections of the pumps are on the outboard side and connect to a common 10-inch central overhead discharge main. A 4½-kilowatt Standard air compressing and generating set furnishes air for handling the main engines and electricity for lights and motors. This 50 feet by 14 feet machinery space, therefore, has 46 gasoline motor cylinders totaling 1650 horsepower, which makes the question of ventilation very important. Two electric blowers, with a total capacity of 4000 cubic feet a minute, take air through the after end of the steel trunk house and deliver it through ducts abreast of each propelling and each pump engine. A 26-inch electric ventilating fan in the 42-inch ventilating stack removes the hot air. In the compartment aft of the engine room 1200 gallons of gasoline are stored in three copper tanks. Air pressure is used to force fuel to the motors.

# The O. S. K.'s New Office Building in Kobe, Japan

**The photographs show two exterior views and one interior view of the new office building of the Osaka Shosen Kaisha in Kobe. The interior view is of the company's office on the first floor.**







A NEW $1,000,000 office building at No. 5, Bund, Kobe, was recently opened by the Osaka Shosen Kaisha. It is seven stories high with a basement under the entire structure; is of reinforced concrete; occupies approximately 16,000 square feet of ground and has a floor space of about 124,000 square feet. Work was begun in August, 1920. The O. S. K. uses the ground floor and the first floor above for its own use and the upper floors are rented.

Granite has been employed for the finishing of the ground floor and teak for screens, furniture and ornamentation. The finishing of the floors above is in tiling. On the ground floor are reception rooms and the main passenger and freight offices and private offices of officials of the company. On the second floor are rooms for clerks. Three passenger elevators having a lifting capacity of 2500 pounds each and one freight elevator of 5000 pounds' capacity have been installed. Steam heat will be used. Complete conveniences have been provided, such as mail chutes, attachments for telephone lines in each room, ventilation of the entire building by means of electric fans in the basement, vacuum cleaning apparatus feeding directly to tubes that convey dirt to the basement, an electric clock in each room, and a kitchen on each floor. Most of the materials of the building were imported from the United States.

The building overlooks the harbor and is the most conspicuous structure in downtown Kobe.

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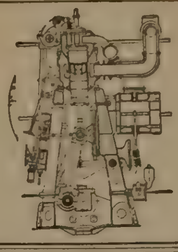
Messrs. H. M. H. Nemazee of Hongkong and Shanghai have inaugurated a direct service between these two ports and Vladivostok with a vessel of about 2600 gross tons, accommodating 30 first and 30 second-class passengers.

# Oil Engines and Motorships



# THE GOLDEN GATE

## A Description of Some of the Electric Features of the First Diesel-Electric Ferryboat to be Placed in Service

By W. H. WILD*

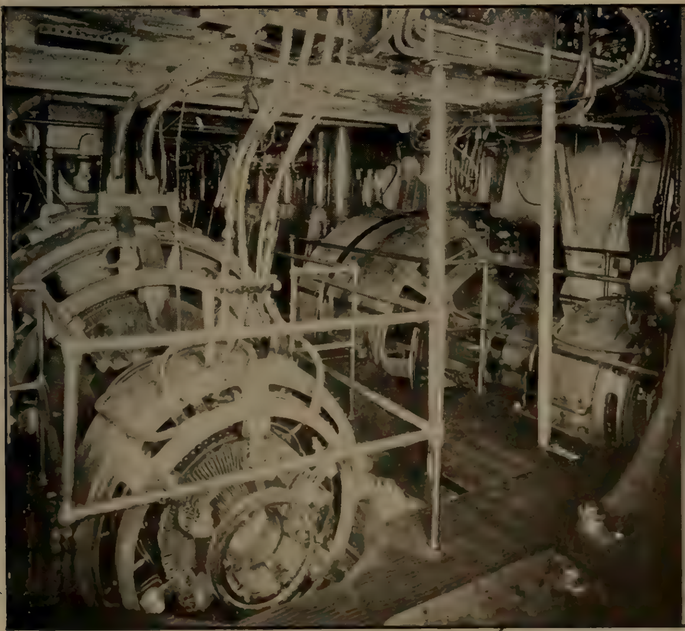
TO San Francisco Bay belongs the distinction of being the scene of operations of the first electrically-propelled ferryboat to go into service in this country. She is the Golden Gate, whose first run was made during the early part of July. Eventually a fleet of similar boats will be operated by the Golden Gate Ferry Company. The line is intended to to furnish a fast service across the bay from San Francisco to Sausalito, forming a link between the northern and southern coastal highway systems of California.

The Golden Gate is equipped with diesel-electric drive; has an overall length of 220 feet and a displacement length of 207 feet. She represents a radical departure in ferryboat propulsion, being the first double-ended boat in which each propeller is driven independently of the prime mover. Experiments conducted over a number of years on double-ended steam ferryboats have established the fact that the most efficient method of propulsion is by the stern propeller, but the problem of how to concentrate the power on this propeller remained without a really satisfactory solution. The flexibility of electric drive, as applied to the Golden Gate, has, however, solved this problem as well as others, in a highly satisfactory manner. How this is accomplished can best be shown by a description of the propulsion equipment and its operating characteristics.

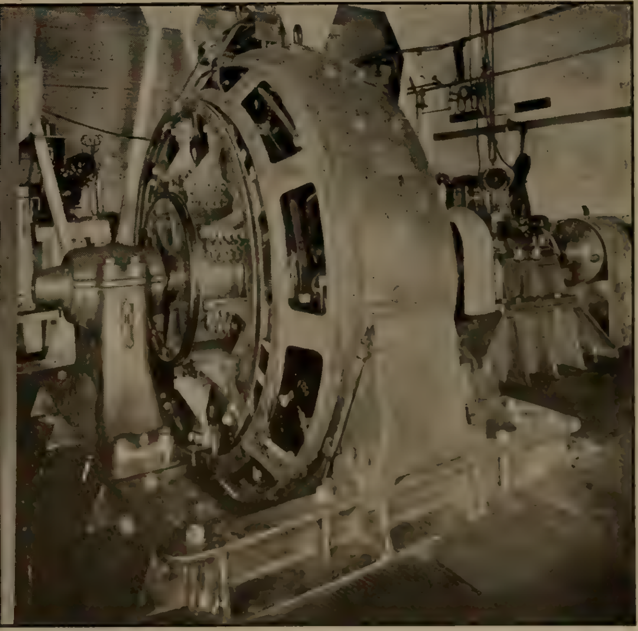
### Propulsion Equipment

The propulsion equipment consists of two 500 B.H.P. Werkspoor Pacific diesel engines directly connected to a 360-kilowatt, 250-volt, direct-current generator, two 750-horsepower, 500-volt motors, one on each propeller shaft, and of the control system for both generator and motors. This latter is so arranged that control of the equipment can be had from either of the pilot houses or the engine room as desired. There are also a number of electrically-driven engine room auxiliaries. Power for the auxiliaries when the boat is in dock, and the main units shut down, is supplied by a 35-kilowatt, 125-volt generator driven by a gasoline engine. When running, power is supplied by one of the direct-connected auxiliary generators.

Each of the main generators is shunt wound and excited from a 35-kilowatt, 115-volt auxiliary generator mounted on the same shaft. The two generators are electrically connected through the engine room control panel, various combinations of operation being obtained by changing the positions of the panel



On the left, two generating sets and exciters.



On the right, one of the main driving motors of the Golden Gate.

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* Marine Department, General Electric Company.

switches. Normally both generators in series supply current at 500 volts to the motors, but either of them can be cut out of the circuit if it is desired. Two 500 volt shunt wound motors are located at opposite ends of the engine room, their armatures being electrically connected in parallel. Under normal power conditions, that is, when the generators are supplying 500 volts, the stern propeller has a speed of 180 R. P. M., and the bow propeller about 120 R. P. M., causing it to act as a "pilot." The effect of operating the low propeller in this way saves power at least equal to the electrical losses in the equipment.

### Main Control Equipment

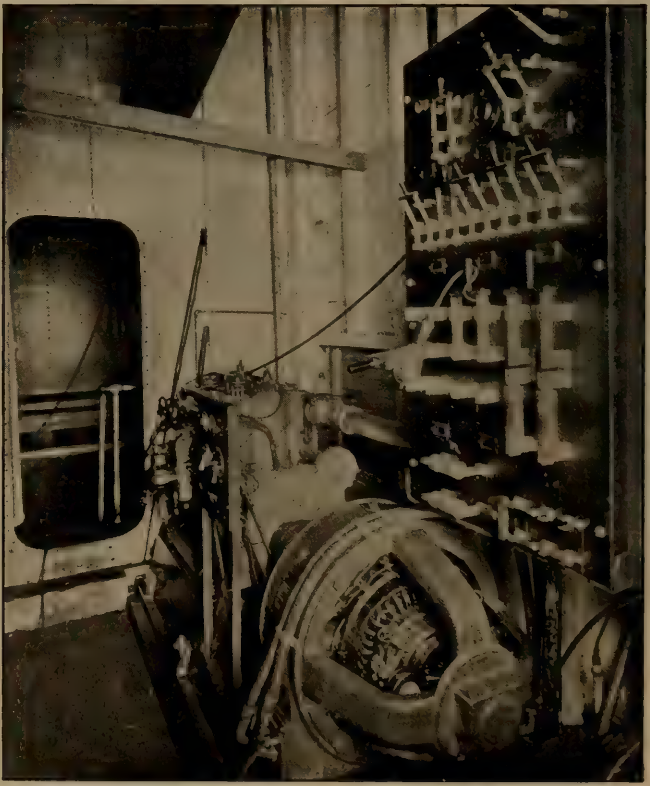
The main control equipment, which is mounted on a gallery in the engine room, consists of a panel that carries the meters, line switches, reversing switches and transfer switches for the motors and generators; the overload contactors, a controlling rheostat, and a resistor that is connected in the fields of the motors, and used to vary their speed. The two pilot house controls each consist of a panel on which are mounted speed and power indicating instruments similar to those on the engine room panel, and a main controlling rheostat for operating the field circuits and overload contactors in the armature field circuits. Transfer of control to either pilot house is accomplished by two eight-pole double-throw switches mounted on the engine room control panel.

The different speeds of the motors are obtained by varying the voltage of the generators by means of the apparatus mentioned. In obtaining the "pilot" motor speed, for example, the field of the forward motor is strengthened, and, after the proper speed has once been determined, it is made the subject of an automatic setting of the control. The wiring on the panel is so arranged that it is a comparatively simple matter to obtain any of the desired operating combinations; the generators can be connected in series, or either one separately, supplying line current to the motors. It is also easy to meet emergency conditions because of the flexibility of the control apparatus.

Pilot house control panel and pilot house controlling rheostat hand wheel of the Golden Gate

Engine room controlling rheostat control panel and switchboard of the Golden Gate

This same feature of flexible control is, together with the operating characteristics of the electric motor itself, the main factor contributing to the success of the diesel-electric system of propulsion. One of the most important requirements of a ferryboat is that there be absolute control over forward speed, stopping and reversing, for reasons that are readily apparent when one considers the congested harbor conditions through which it must navigate. The fact that the speed and direction of the propellers is changed irrespective of the prime mover, and that the boat may be controlled directly from either pilot house greatly increases the ease with which it can be handled, either in emergencies, or in the ordinary run of work, such as in docking.



25-kilowatt, 950 R. P. M., 125-volt CW auxiliary generator

# THE TWIN-SCREW MOTORSHIP TENNESSEE

## Burmeister & Wain of Copenhagen Deliver Third Sister to Norwegian Owner. She is Specially Designed for Long Voyages

The Tennessee on her trials

THE twin-screw motorship Tennessee was built by Burmeister & Wain of Copenhagen to the order of Wilh. Wilhelmsen, Tensberg, Norway, and is a sister-ship to the Teneriffa and Thalatta recently delivered to the same owners. The vessel is specially designed for long voyages, her fuel oil capacity being sufficient for a radius of more than 30,000 miles.

She is built to Lloyd's class 100A1 special survey, awning deck with freeboard, and with certificate for carrying oil fuel in double bottom.

### Particulars of the Vessel

The principal particulars are as follows: length overall, 444 feet 4 inches; length between perpendiculars, 425 feet 5⅛ inches; breadth molded, 55 feet; depth molded to awning deck, 38 feet 6 inches; depth molded to upper deck, 30 feet 6 inches; depth molded to lower deck, 22 feet 5½ inches; gross tonnage, 7124 tons; net register, 4482 tons; capacity of holds, about, 570,000 cubic feet of grain; fuel oil capacity, about, 1300 tons; deadweight, about, 11,000 tons; draft loaded, 29 feet; average speed at sea, 11¼ knots; normal indicated horsepower, 3100; normal consumption of fuel oil in 24 hours, 10 tons.

The hull is subdivided into eight compartments by means of seven watertight bulkheads carried up to the upper deck, and there are five cargo holds, three forward of the machinery space and two abaft the machinery space. A double bottom tank extending from peak bulkhead to peak bulkhead is fitted for the carriage of fuel oil or water ballast; in addition a deep tank for fuel oil is fitted between the shaft tunnels in No. 4 hold. The forepeak is arranged for water ballast and the aft peak for fresh water. The ship has three complete decks of steel supported by a system of girders and wide-spaced pillars in holds, giving a good clear space for the stowage of cargo. The cargo hatches have a width of 18 feet and an average length of about 35 feet.

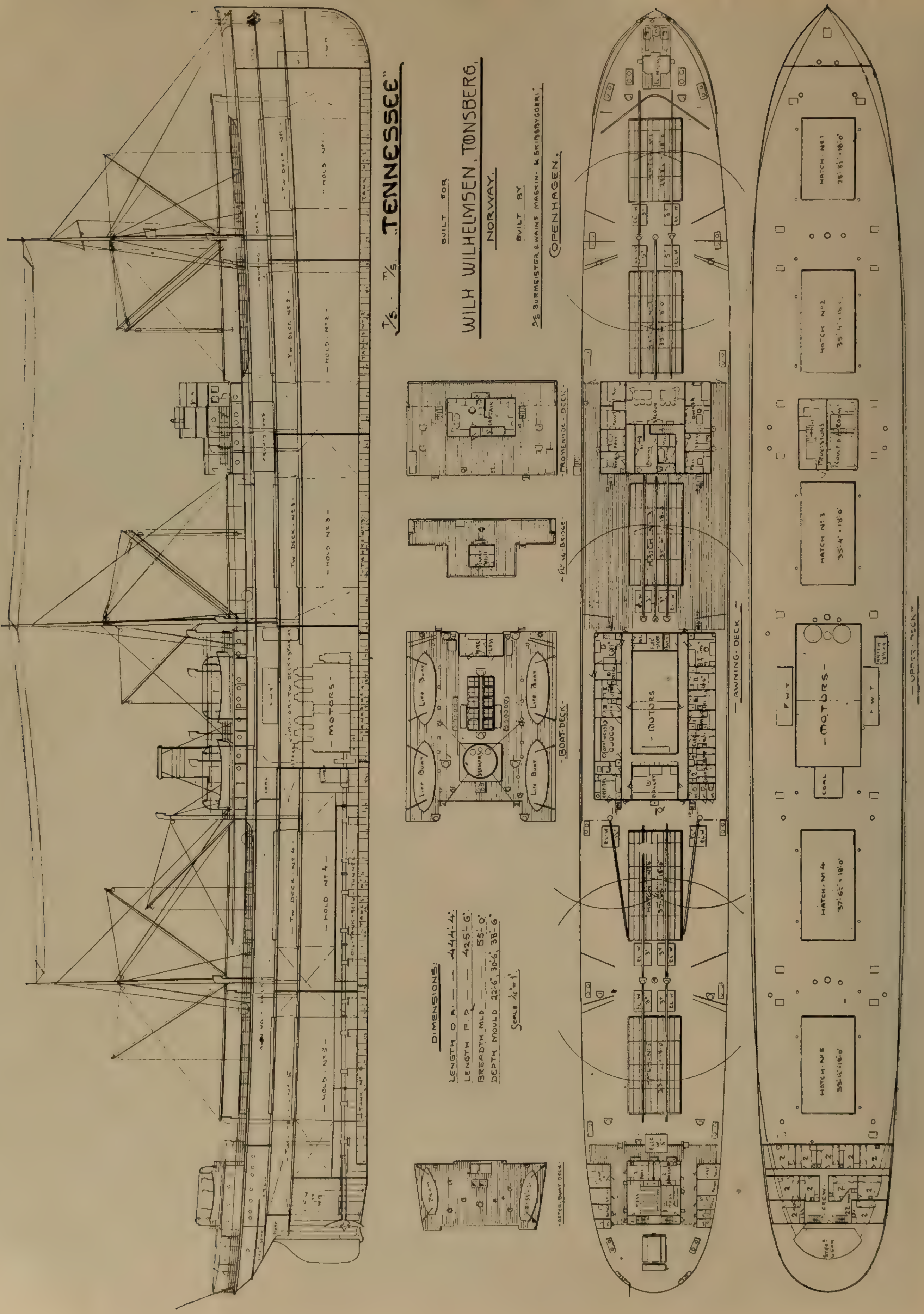
### Cargo-Handling Equipment

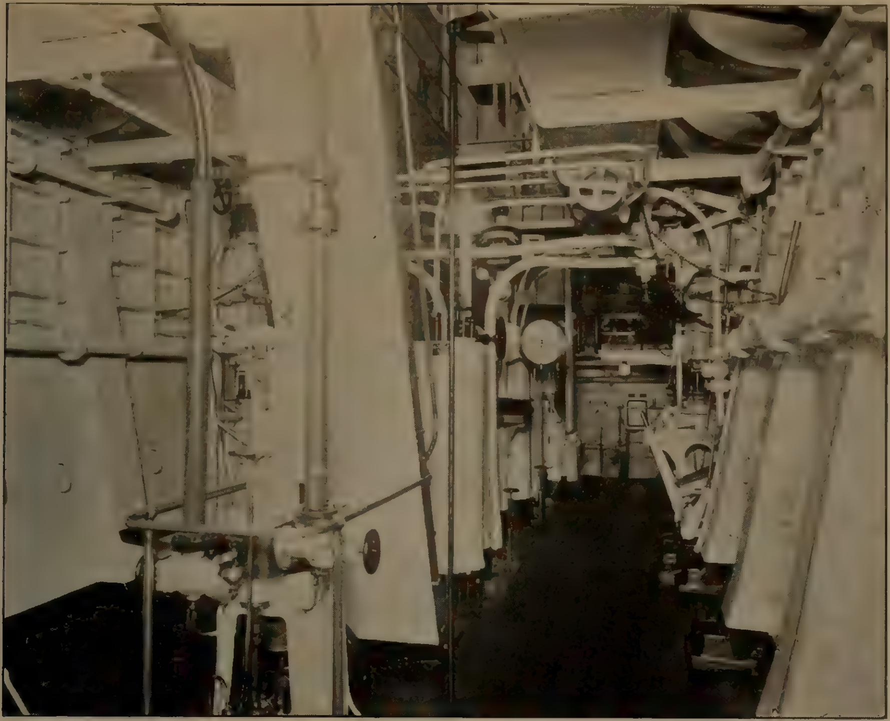
To facilitate the rapid handling of the cargo two steel tube cargo derricks capable of lifting three tons in single purchase and five tons in double purchase are fitted at each hatchway, and in addition there are two 2-ton derricks fitted at No. 4 hatch. For manipulating heavy lifts there is a 25-ton derrick fitted on the foremast at No. 2 hatch and a 10-ton derrick on the mainmast at No. 3 hatch. All the cargo winches are electrically driven and are of Allmanna Svenska Elektriska Aktb. make. There are eight 3-ton winches, two 5-ton winches and two 2-ton winches for working the cargo derricks, and also a heavy winch on the deck aft fitted with extended ends and large warping drums for warping purposes. The windlass is of Clarke, Chapman & Company's make, suitable for chain cables 2-5/16 inches in diameter, and is electrically driven. The steering gear is of the electro-hydraulic Hele Shaw type from Hastie & Company, Greenock, and is controlled from the bridge by means of a telemotor. An emergency steering column is also fitted on the top of the deck house aft.

The deck of the Tennessee, looking forward

### Accommodations for the Crew

The saloon is arranged in the foremost deckhouse, and is tastefully fitted out in polished mahogany. There are also four 2-berth passenger cabins excellently fitted out to meet the requirements in the tropics; likewise a special suite of apartments for the owner's private use. The captain's accommodation, consisting of bedroom and sitting-room in pol-


T/S. M/S. "TENNESSEE"
BUILT FOR
WILH WILHELMSEN, TØNSBERG,
NORWAY.
BUILT BY
A/S BURMEISTER & WAINS MASKIN- & SKIBSBYGGERI
COPENHAGEN.
DIMENSIONS:
LENGTH O. A. — — 444'-4"
LENGTH P. P. — — 425'-6"
BREADTH MLD — — 55'-0"
DEPTH MOULD 22'-6", 30'-6", 38'-6"
Scale 1/16" = 1'
- PROMENADE - DECK -
- FLYG. BRIDGE -
- BOAT DECK -
- AFTER BOAT DECK -
- AWNING - DECK -
- UPPER - DECK -
- HOLD - Nº 1 -
- TW. DECK - Nº 1 -
- HOLD - Nº 2 -
- TW. DECK - Nº 2 -
- HOLD - Nº 3 -
- TW. DECK - Nº 3 -
- HOLD - Nº 4 -
- TW. DECK - Nº 4 -
- HOLD - Nº 5 -
- MOTORS -
PROVISIONS
COAL
F. W. T.
LIFE BOAT
CREW
STEER. GEAR
HATCH Nº 1 28'-8½" × 18'-0"
HATCH Nº 2 35'-4" × 18'-0"
HATCH Nº 3 35'-4" × 18'-0"
HATCH Nº 4 37'-6" × 18'-0"
HATCH Nº 5 35'-6" × 18'-0"



A view of the maneuvering platform between the main engines of the Tennessee, looking forward

ished mahogany, are neatly and conveniently arranged in the deckhouse below the bridge. The accommodations for the officers and engineers are in the midship deckhouse abreast of the motorcasing in spacious well fitted out cabins. The crew are berthed aft, sleeping accommodations being arranged below the awning deck in well lighted and well ventilated cabins for two men in each. The messrooms are in the deckhouse above.

A Marconi wireless telegraph station with accommodations for the wireless operator is fitted in the deckhouse on the boat deck.

The culinary arrangements are in accordance with the latest practice, refrigerated provision rooms, ice generators, etc., being provided for. Electric light is installed throughout the ship.

Fire extinguishing installation of Lux, Ltd., $CO_2$ system is fitted with pipe connections to all cargo holds.

### Her Propelling Machinery

The propelling machinery is of Burmeister & Wain's standard type for twin-screw ships. The particulars of the main engines are as follows: two Burmeister & Wain 4-cycle, 6-cylinder diesel motors; diameter of cylinders, 630 mm.; length of stroke, 960 mm.; revolutions a minute, 125; indicated horsepower, 3100; brake horsepower, 2400.

The main engines are short-stroke, forced lubricated crosshead type, with 3-stage compressors for supplying the necessary injection air for atomizing the fuel oil, fitted at the fore end of the engine.

All auxiliary machinery in the engine room as well as the deck machinery is electrically driven, the necessary current being supplied by three 60-kilowatt diesel dynamos. The voltage of the current is 220 volt and for lighting purposes it is transformed down to 110 volt by means of a motor generator.

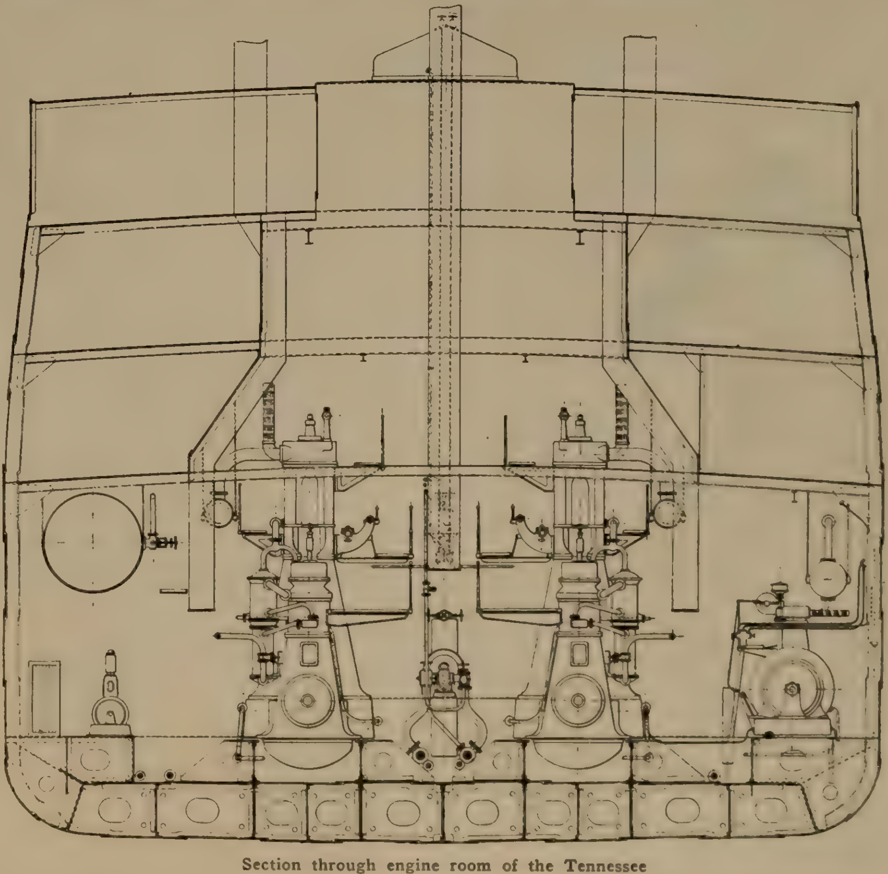
Each of the generators is sufficient for supplying the necessary current under normal working conditions at sea, whereas two or all three have to be started when maneuvering with the maneuvering compressor running, or when loading or discharging cargo. A small cross-tube boiler of about 100 square feet heating surface is fitted for supplying the necessary steam for the steam heating installation.

### Results of the Trial

The trial trip was run September 28 in the sound at Copenhagen, the following results being obtained: mean draft on trial, 9 feet 8 inches; displacement on trial, 4415 tons; indicated horsepower, average, 3640; revolutions a minute, average, 144; mean speed on trial, 12.6 knots.

During the consumption trial the main engines developed 3434 I. H. P. at 137.7 revolutions a minute, on a fuel oil consumption of 135.54 grammes or 0.298 pounds an I. H. P. an hour, net calorific value being 10,152 kilo calories (18,274 B. T. U.), including the consumption of auxiliary engines producing the necessary current for the auxiliary machinery, steering gear and electric light.

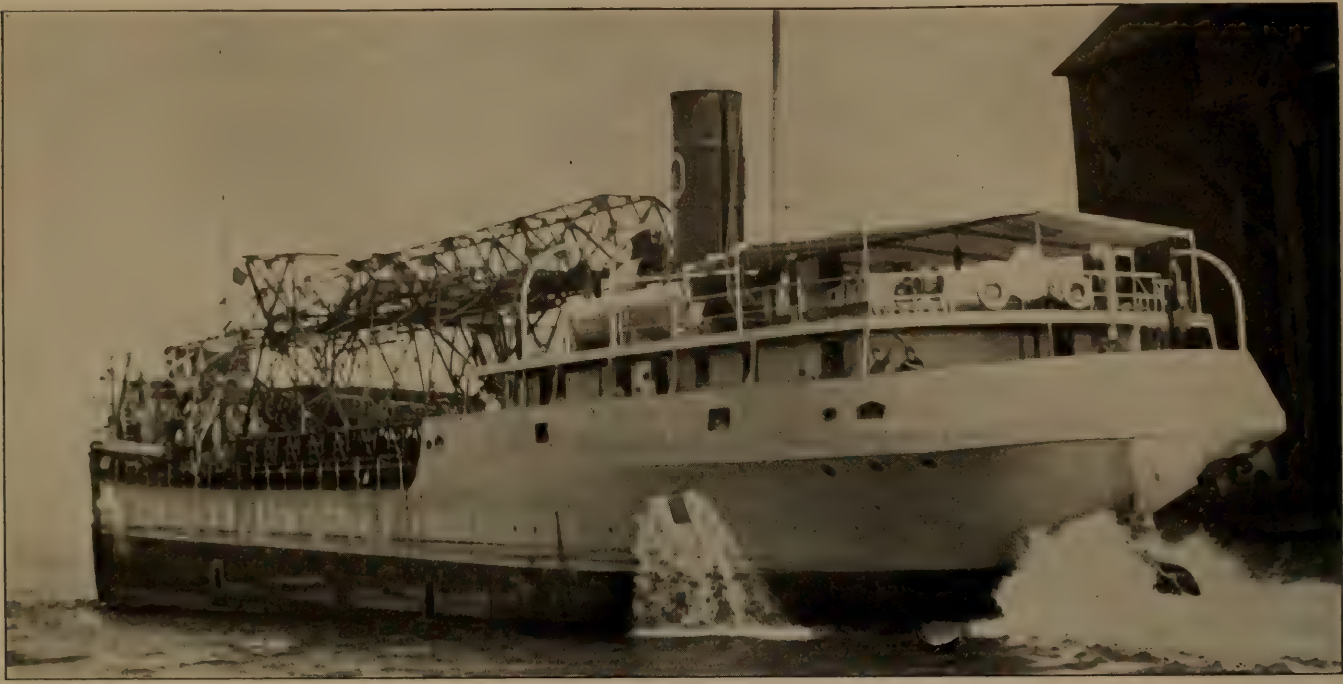
After successfully finishing her trials, the ship returned to the builder's yard to land the officials and trial trip crew and left Copenhagen on the following day on her maiden voyage to Australia.



Section through engine room of the Tennessee

# THE CHARLES DICK

## An Extraordinary Vessel, Equipped with Special Pumps for Loading Sand and Gravel, is Built by Collingwood for Canadian Owner



The steamship Charles Dick

THE steamer Charles Dick, built by the Collingwood Shipbuilding Company, Collingwood, Ontario, for the National Sand & Material Company, Welland, Ontario, is the only one of her class ever built in Canada and is the last word in ships of this type. She is equipped with special pumps for loading sand and gravel and with special equipment for unloading in the shortest possible time. The owners have large contracts for sand and gravel for all kinds of public works and for the Welland Canal and the ship is quite an acquisition to Canadian tonnage.

The following are the vessel's dimensions: length overall, 258 feet; length between perpendiculars, 250 feet; breadth molded, 43 feet; depth molded, 20 feet; gross tonnage, 2015; deadweight, 2650; capacity of cargo compartment, 2000 cubic yards.

The vessel was built of steel to the requirements of the British Corporation for the Survey and Register of Shipping. The machinery, consisting of one triple expansion engine having cylinders 19 inches, 32 inches, 56 inches by 36 inches stroke, and two boilers, 14 feet 7 inches diameter by 10 feet 8 inches long, is placed aft. Cargo is carried in two compartments amidships and is fed into these by means of a trough with discharge openings at intervals. At each side of the cargo compartments are buoyancy spaces, closely subdivided by watertight bulkheads. Water ballast is carried in double bottom tanks under machinery in peaks and in peak tank forward.

Gravel is loaded by means of two 18-inch pumps located forward. The suction pipes are connected to shell plates about 4 feet 6 inches above keel. The shell is recessed in way of suction inlets so that vertical slides for flanges of pipe elbows will not project beyond molded line of ship.

Unloading is carried out by means of a grab bucket carried on A frames. This bucket discharges into a hopper amidships, which in turn feeds an elevator. The cargo falls from the elevator to a conveyor, which lands it on dock.

The captain and crew are accommodated forward and the officers' dining room, galley, etc., are housed aft.

### TWO RECORD TOWS

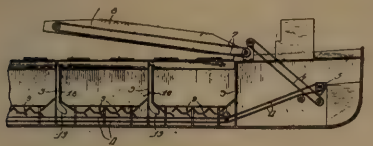
THE Panama Canal Record discusses two long tows as follows:

The Panama Canal has sold the 20-inch pipeline suction dredge No. 84 to a contracting company, and has delivered it to Cartagena, Colombia, where it is to be used in deepening a channel to the Magdalena River. The dredge was towed from Cristobal to Cartagena, a distance of 281 miles, by the Panama Canal tug Tavernilla, without being knocked down or otherwise dismantled, and arrived at Cartagena with steam up in one boiler, ready to go to work. The dredge is 124 feet in length by 36½ feet beam, built on a rectangular hull, with a superstructure of two stories, the crew being quartered and subsisted on the upper story. The depth of the hull is 9 feet, and the draft about 4 feet. In preparation for towing the sides were boxed in, at Cristobal shops. The tug used a towing hawser of 1000 feet. The time of towing was about 43 hours, to reach the breakwater at Cartagena, and 8 hours later delivery had been completed and the tug was on her way back to Cristobal. The return was made in 26 hours. Good weather was encountered throughout. The towing of a vessel of the type of the dredge, for such distance in the open sea, without dismantling any of the equipment or structure, is said to be something that was never accomplished before.

In the findings in the arbitration of salvage payment to be made for the services of the Panama Canal tug Tavernilla, in towing the steamship Willpolo from a point about 700 miles north of Balboa to Los Angeles, last April, it was brought out that the length of the tow was 1940 miles, "which is a longer towage than is involved in any reported salvage decision."

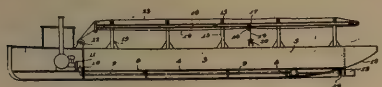
# SOME MARINE PATENTS OF THE MONTH

1,430,708. SHIP. Charles C. West, Manitowoc, Wis., assignor to Manitowoc Ship Building Corporation, Manitowoc, Wis., a Corporation of Wisconsin. Filed Sept. 26, 1921. Serial No. 503,136. 6 Claims. (Cl. 214—15.)



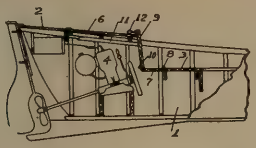
1. In a self-unloading ship of the type specified adapted for transporting and unloading freight in comminuted form both in bulk and in bags, the combination of a hopper in the cargo space of the ship, an unloading system of conveyors one of which extends beneath the hopper, said hopper being provided with discharge openings through which bulk freight in comminuted form will feed by gravity onto said conveyor, a removable false bottom for said hopper which closes off the lower portion of said hopper with which the discharge openings for comminuted bulk freight communicate, and a chute in said hopper the lower end of which extends downwards through the bottom of the hopper and is adapted to discharge upon the conveyor which extends beneath said hopper, said chute comprising a wall within the hopper which consists of removable sections, and said chute being sufficiently large to permit the passage therethrough of bags containing freight, substantially as described.

1,426,990. LOG-CARRYING BARGE. Bernard L. Johnson, Vancouver, British Columbia, Canada. Filed Aug. 8, 1921. Serial No. 490,669. 2 Claims. (Cl. 114—72.)



1. A log carrying vessel having a bow portion for containing the propelling and other machinery and a hull extending aft therefrom, said hull having a flat bottom and wall sides, the bottom having an upward run at the after end toward the load water line, said hull having also a log pocket between the bottom and sides, which pocket is open at the after end, means for submerging the bottom of the log pocket, and means for loading logs in the pocket.

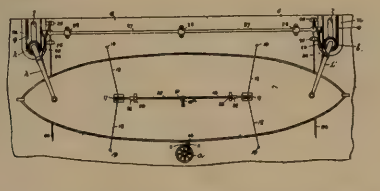
1,431,924. MOTOR BOAT. Martin Beebee, Marine City, Mich., assignor to Sydney C. McLouth, Marine City, Mich. Filed Apr. 15, 1922. Serial No. 553,209. 3 Claims. (Cl. 114—78.)



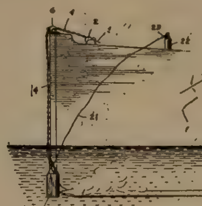
1. In a boat, a covered stern formed with a hatchway having a movable cover, a transverse seat having a hinged section, a seat back hinged to said section, the upper end of said back adapted to be releasably secured to the forward end of said movable hatch cover, said seat, back and cover when closed forming a closed fantail motor compartment, for the purposes set forth.

1,430,516. SHIP'S DAVIT. Pieter Vanderwal, Brondesbury, London, England. Filed Mar. 11, 1922. Serial No. 543,011. 10 Claims. (Cl. 9—22.)

1. In ships' davits capable of movement to and from an angular outboard position, means for coupling the davits together, means for operating said coupling whereby the davits are simultaneously reciprocated to and from an angular outboard position, means for positively rotating both the said davits during their said angular movements except for portions of said movement.

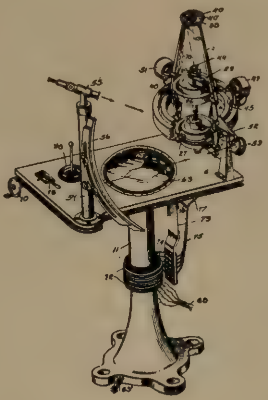


1,430,773. METHOD AND APPARATUS FOR FREEING THE BOTTOMS OF VESSELS FROM BARNACLES AND THE LIKE. James W. Van Meter, San Rafael, Calif. Filed Sept. 16, 1921. Serial No. 500,885. 3 Claims. (Cl. 114—222.)



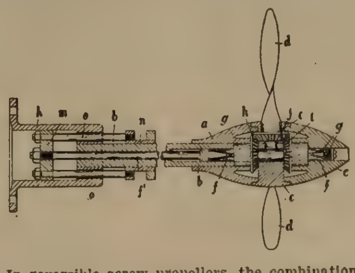
1. An apparatus for freeing the bottoms of vessels from barnacles and the like, comprising a container provided with a passage therethrough, means for lowering said container over the prow of a moving vessel, and means for passing a stream of gas through said container while submerged for the purpose of discharging a deadly emanation against the hull of the vessel.

1,429,588. GYROSCOPIC APPARATUS. John Fillmore Hayford, Evanston, Ill., and Lyman James Briggs, Battle Creek, Mich., assignors to the Government of the United States. Filed Apr. 17, 1919. Serial No. 290,895. 16 Claims. (Cl. 33—73.)



1. Gyroscopic apparatus comprising, in combination, a support subjected to disturbing movements and forces, a gyroscopic system supported by said support and maintaining a constant horizontal reference line despite said movements and forces, and means for indicating the relative positions of said support and said line.

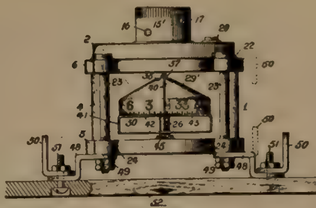
1,431,382. REVERSIBLE SCREW PROPELLER. Edgar Duerr, Bella Vista, England. Filed Nov. 14, 1921. Serial No. 515,063. 2 Claims. (Cl. 170—163.)



1. In reversible screw propellers, the combination with a plurality of blades, a boss whereon the said blades are pivotally mounted and pinions secured to the blade pivots, of a pair of wheels engaging said pinions and means for imparting rotary movements in opposite directions to said pinions, as set forth.

1,431,776. MAGNETIC COMPASS. Charles H. Colvin, East Orange, N. J., assignor to The Sperry Gyroscope Company, Brooklyn, N. Y., a Corporation of New York. Filed Sept. 26, 1918. Serial No. 255,746. 14 Claims. (Cl. 33—223.)

1. A compass comprising a base member, a cylindrical glass intermediate portion, a top member, means for clamping said glass portion between said two members, a post supported on said base member, and a compass rose pivotally supported on the top of said post, said rose having a substantially cylindrical graduated portion extending downwardly below the top of said post.



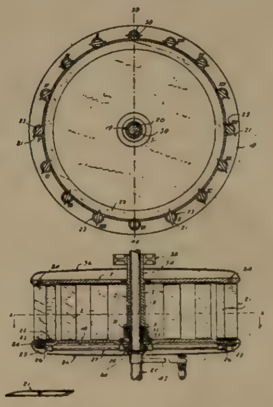
From Official Gazette, United States Patent Office

1,432,700. PROPELLER. Kurt F. J. Kirsten, Seattle, Wash., assignor of one-half to William E. Boeing, Seattle, Wash. Filed Dec. 1, 1921. Serial No. 519,247. 95 Claims. (Cl. 170—141.)

1. A propeller embodying a plurality of blades which rotate on their own axes while revolving in an orbit about a common axis, the ratio of the width of said blades to the orbital diameter being of such degree of smallness that the angle of incidence formed by said blades with the direction of their movement through the fluid medium will be wholly upon one side of each blade throughout its orbital revolution; and means to produce rotation of the blades on their own axes with cyclic performance periodically uniform for every revolution of the blades about said orbit.

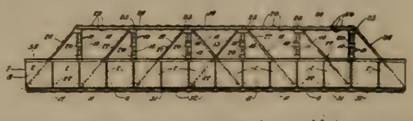
10. A propeller blade having a longitudinal pivotal axis, the radius of curvature of the surface of the blade on one side of its cord increasing from one edge of the blade to the other and conversely identical on the other side both as to direction of curvature and as to position as respects the end of the cord.

95. A propeller embodying a plurality of blades which rotate on their own axes while revolving in an orbit about a common axis, said blades being disposed symmetrically with respect to the axis of symmetry, the ratio of the width of said blades to the orbital diameter being of such degree of smallness that the angle of incidence formed by said blades with the direction of their movement through the fluid medium will be wholly upon one side of each blade throughout its orbital revolution; and means to produce rotation of the blades on their own axes with cyclic performance periodically uniform for every revolution of the blades about said orbit.



1,430,179. DREDGE HULL. William H. Owens, Evans City, and John L. Taylor, West View, Pa. Filed Mar. 11, 1922. Serial No. 542,941. 5 Claims. (Cl. 114—77.)

1. A hull comprising a plurality of pontoon members, each of said members being composed of bottom, end and side framing having suitable plating rigidly secured thereto, and a plurality of trusses extending in a fore-and-aft direction the entire length of the hull and adapted to rigidly connect said pontoons together, said trusses each being composed of top and bottom chords, a plurality of vertical posts and a plurality of diagonal bracing members.



# JAPANESE SHIPPING BOUNTIES

## Government Assistance Given Both to Builders and Operators. Mail Bounties May Supersede Direct Navigation Subsidy Heretofore Given

By EUGENE T. CHAMBERLAIN*

AT the outbreak of the world war, Japan's fleet of ocean merchant steamers, aggregating 1,700,000 gross tons, was about 250,000 gross tons less than the corresponding merchant fleets of France and Norway and about 250,000 gross tons more than the corresponding fleets of the Netherlands and Italy. The advance of Japan within a generation from a subordinate position in maritime affairs to a place among the nations of second rank in merchant shipping, and, since the war, at the Washington Conference, to a place with the British Empire and the United States as a naval power, was in the line of normal development of an insular empire, but its rapidity was greater even than the pre-war growth of German shipping.

### Compelled to Own Ships

In the thirty years after 1880, German ocean-steamer tonnage multiplied twelvefold, and Japanese ocean-steamer tonnage multiplied thirtyfold. The former increase was based on the military conquest of the mineral wealth of Lorraine. Although Japan within the generation had waged successful wars by land and sea against the Chinese and Russian empires, the rapidity of the growth of her merchant shipping and shipbuilding was due to the use of the resources of the national treasury to develop the maritime aptitudes and meet the necessities of an insular people whose territory lacked iron ore, the basis of modern shipbuilding and navigation.

In square miles and population, Japan exceeds the British Isles; its population is almost as dense, and its need for imports by sea of food and raw materials would be as great were it not for the fact that its standards of living and industrial development are different. The shipbuilding and navigation of Britain are based on her ore and coal mines. Japan has to import her iron ore, and half of her exports are raw or manufactured silk of large value in proportion to bulk.

Conditions thus compel Japan to be a shipowning nation. Whether she should be solely a shipowning nation, like Norway, which is without iron and also without coal, or like Italy, which, without either iron in any quantity or coal at all, is both a shipbuilding and shipowning nation, was determined doubtless, as in the case of Italy, almost wholly by naval considerations. Granted the need of a navy, the ultimate adoption of a policy of shipbuilding and navigation bounties by Japan was an inevitable supplement to the purchase of foreign-built merchant ships to be navigated under the Japanese flag.

### Construction Bounties

Since 1896 the construction of merchant vessels in Japan had been encouraged directly through the Shipbuilding Bounty Law and indirectly through the Navigation Bounty Law. The former made it possible for corporations, whose members or shareholders were Japanese subjects employing competent naval architects and owning docks, slips and machinery capable of constructing vessels of 1000 gross tons or more, to receive a bounty varying with the type of the vessel from 11 yen to 22 yen per ton of the gross tonnage of such vessels as they constructed which satisfied the requirements of the authorities.

Restrictions were placed on the material entering into the construction of vessels on which bounties were paid. For example, no material of foreign manufacture, other than the rudder, sternpost, all shafts with a diameter of more than seven inches, the wheels, spindles and blades of turbines, and certain other material not manufactured in Japan, could be used in the machinery and hull of vessels having a gross tonnage of not more than 3000 tons; while windlasses, winches, rudder machinery, pumps, lifeboats, windows, ash hoists and transformers on vessels between 3000 and 5000 tons were required to be of domestic manufacture.

As the world war continued and the demand for merchant ships increased, while the supply diminished and merchant shipbuilding in Europe almost ceased, Japanese shipyards were extended and new yards were established to supply first the orders of Japanese shipowners, then of shipowners of the allied nations, and finally even of the United States Shipping Board. In 1914 and again in 1915 Japanese yards built about 66,000 gross tons, on which the shipbuilding bounties amounted to about $800,000 (the fluctuations in exchange value of the yen were not considerable, and it may be taken throughout as equivalent to 50 cents) annually. In 1916 the output and the corresponding amount of bounty were doubled; in 1917 Japan built 350,000 gross tons, of which a third was for foreigners, but on ships for Japanese the building bounty was over $2,600,000. In 1918 Japanese yards built 490,000 gross tons, an annual output surpassing any previous German output and exceeded before the war only by the usual British output and on three occasions by the pre-war product of American yards.

### Submarine War's Effect

In brief, within two years submarine warfare developed Japanese shipbuilding and Japanese shipping at sevenfold the rate of its increase in twenty years under a carefully devised bounty project. The purpose of the Shipbuilding Bounty Law of 1896 was being accomplished by other instrumentalities, and in 1918 the Japanese government suspended its operation; so far as can be ascertained, Japan has no intention of putting it into effect again in the near future. The following table shows the progress of shipbuilding and the extent of the shipbuilding bounties from April 1, 1913, to March 31, 1918:

| Fiscal year, ended Mar. 31— | Construction bounties paid Yen | Construction under bounty | | Total construction | |
|---|---|---|---|---|---|
| | | No. | Gross tons | No. | Gross tonnage |
| 1914 ........ | 1,639,942 | 16 | 65,146 | 32 | 85,861 |
| 1915 ........ | 1,550,782 | 15 | 68,001 | .... | ........... |
| 1916 ........ | 3,074,739 | 37 | 136,842 | 55 | 145,624 |
| 1917 ........ | 5,210,913 | 53 | 233,995 | 104 | 350,141 |
| 1918 ........ | 2,489,681 | 29 | 115,109 | 198 | 489,924 |
| Total.... | 13,966,057 | 150 | 619,093 | 389 | 1,071,550 |

The output of Japanese yards in 1919 was 133 ships of 611,883 gross tons; in 1920 it was 140 of 456,642 gross tons; and in 1921, 43 of 227,425 gross tons.

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* Transportation Division, Department of Commerce—article reprinted from Commerce Reports.

The iron mines of China and Manchuria are the natural sources of supply of materials for shipbuilding and the other steel industries of Japan. The richest ore mines of China are in the Tayeh district on the Yangtze River near Hankow, navigable except in winter by larger ocean steamers and distant from the Nagasaki shipyards about 950 miles—not much more than the distance which separates the ores of the Mesabi range from the furnaces of Pittsburgh.

The output of these mines for some years has been mortgaged to a Japanese syndicate; they are credited with an annual output in 1921 of 700,000 tons of ore, out of an estimated total Chinese output of 1,250,000 tons for that year, nearly all of which is under Japanese control and is exported to Japan either as ore or as pig iron and manufactured materials. In 1919 Japan made only 209,000 tons of pig iron, a great part of her ore in China being converted into iron in pigs or bars, or into steel in ingots, plates and sheets before export. The production of steel in Japan in 1921 was 500,000 tons, the imports were 500,000 tons, and the stock on hand nearly 300,000 tons, while her consumption of steel during the year was 1,150,000 tons.

### Bounties on Steel

The rapid development of shipbuilding plants during the war, rendering unnecessary the payment of bounties on shipbuilding after 1918, enabled Japan to push one step further back its policy of bounties. The country was embarrassed by the lack of steel plants and their machinery to supply materials for the shipyards, because arrangements for large steel imports from the United States had to be changed in 1917, when the United States entered the war, and imports of steel from Europe had been out of the question from early 1915.

In August, 1917, therefore, Japan enacted a law for encouraging the steel industry, which exempted from income taxes and business taxes those engaged in such enterprises. It provided bounties for various domestic steel products, thus directing state aid to the forms of industry which could lay some claim to it and paved the way for the withdrawal in 1918 of direct state aid to shipbuilding. The amounts of these bounties and tax exemptions are not available, but by 1921 the domestic product of steel in Japan equaled the imports in volume. On a government steel plant nearly 100,000,000 yen has been expended up to this year.

The law to encourage the steel industry was amended in 1921, so that after July 20 bounties are provided only for steel products used in the construction or repair of naval vessels or merchant ships. A bounty is paid for steel ingots and slabs made in Japan equal to 12 per cent of the value of imported steel ingots and slabs, and a bounty equal to 15 per cent of the value of the imported article in the case of bars and rods, shapes, T shapes, angles, ship plates, sheets, tubes, pipes and turbine blades made in Japan, the bounties being paid only when the articles are used in shipyards.

### Navigation Bounties

The Japanese policy of navigation bounties has been so applied as to promote domestic shipbuilding as well as Japanese navigation, so that the abandonment in 1918 of the system of direct construction bounties has less current significance than would appear. Direct construction bounties have been adopted usually by nations which lack iron ore, as a method of providing plants and materials for the construction of warships without imposing upon the national treasury the entire cost of maintaining such plants and procuring materials. It is not unlikely, therefore, that Japan may provide at least temporary measures of promoting shipbuilding to offset the effects of the Washington Conference in reducing the country's naval building program. Early in 1922 ambitious projects were talked about for applying perhaps 250,000,000 yen in the construction during the next five years of 500,000 gross tons of passenger ships, but with the uncertain prospects for ocean passenger traffic in the near future and especially with the advent of the Kato ministry, committed to rigid economy, they seem at present to have been laid aside.

In the meantime, however, the special provisions in the navigation bounty laws in favor of Japanese-built ships operate much as before the war. The addition, for example, of 25 per cent to the navigation bounties in the case of ships built according to plans approved by the government, is included in the navigation bounties and cannot be separately stated, nor indeed are the specifications and particulars exacted by the government as a condition to the grant of this extra bounty disclosed. There is reason to believe that, as in the American ocean mail act of 1891, the British Cunard contract, and the former German mail contracts, these special requirements deal with the conversion of the faster ships into naval auxiliaries and transports. Although the navigation bounties allowed to ships built in Japan are double those allowed in certain cases to foreign-built ships admitted to Japanese register, during the calendar year 1921 Japan built only 43 steamers of 227,425 gross tons, while on December 31, 1921, Japanese owners had contracted in foreign yards for 14 new steamers of 76,000 gross tons, and in the eight months ended February, 1922, had purchased 44 foreign steamers of 280,000 gross tons.

### Navigation Bounty Expenditures

In its main features as to routes, types and speed of steamers employed and number of voyages, the Japanese navigation bounty system was maintained during the war and up to 1921 substantially as before the war. For a time the European line was compelled to abandon the Suez Canal for other available routes, some of the subsidized steamers were at times employed as transports, and Japanese shipping generally was subject, of course, to the vicissitudes of war. The annual expenditures for the navigation bounty system for the eight years from April 1, 1914, to March 31, 1921, inclusive, were 63,921,269 yen, or an annual average of 8,000,000 yen (equivalent to $4,000,000). The routes to which these bounties were devoted, the companies which maintained them, and the bounties appropriated are shown by the table on the next page.

The table, it may be noted, is incomplete for the fiscal year 1921-22 in respect of the European, North and South American and Australian lines, and for 1920-21 it is incomplete as to the Australian line and shows considerable changes from previous years in the bounties for the lines to North and South America. The increase in 1920-21 of about 1,000,000 yen for the South American lines over former years is due mainly to the establishment after the war of a route outbound from Yokohama to Nagasaki, Hongkong, Cape Town and Santos, Brazil, and homeward bound from Santos to Rio de Janeiro, thence through the Panama Canal to Yokohama. Six steamers of from 14 to 15 knots speed and of 5800 gross tons are required to make eight contract round-the-world voyages of 24,500 miles on this route, an average annual mileage of 33,000 miles per steamer.

### New Mail-Pay System

The omissions and changes in navigation bounties for 1920-21 and 1921-22 in respect to lines to Europe, to North America (Puget Sound), South America (West

*Japan's expenditures for navigation bounties, fiscal years ended March 31.*

| Routes and companies. | 1914 | 1915 | 1916 | 1917 | 1918 |
|---|---|---|---|---|---|
| | *Yen.* | *Yen.* | *Yen.* | *Yen.* | *Yen.* |
| Europe: Nippon Yusen Kaisha | 1,943,420 | 1,832,806 | 1,811,910 | 1,754,196 | 1,689,804 |
| North America: | | | | | |
| Puget Sound—Nippon Yusen Kaisha: Osaka Shosen Kaisha. | 2,505,530 | 2,924,777 | 2,949,012 | 2,802,118 | 2,668,924 |
| San Francisco—Toyo Kisen Kaisha | | | | | |
| South America: | | | | | |
| West Coast—Toyo Kisen Kaisha | 324,869 | 303,906 | 297,558 | 291,210 | 284,862 |
| East Coast—Osaka Shosen Kaisha | | | | | |
| Australia: Nippon Yusen Kaisha | 197,891 | 183,206 | 173,808 | 160,232 | 169,470 |
| South Sea: | | | | | |
| Java—Nanyo Kisen Kaisha. | 280,000 | 280,000 | 280,000 | 280,000 | 220,000 |
| Java-Bangkok—Osaka Shosen Kaisha | | | | | |
| China: Nisshin Kisen Kaisha. | 758,625 | 537,752 | 536,189 | 536,762 | 435,310 |
| Dairen: Osaka Shosen Kaisha. | 100,000 | 100,000 | 100,000 | 100,000 | 100,000 |
| Shanghai: Nippon Yusen Kaisha | 215,000 | 215,000 | 215,000 | 215,000 | 107,500 |
| Various | .......... | .......... | 157,761 | 277,186 | 655,154 |
| Total for Japan proper | 6,325,325 | 6,377,447 | 6,521,238 | 6,416,704 | 6,331,024 |
| Chosen (Korea) | 339,941 | 510,685 | 564,577 | 532,300 | 217,689 |
| Taiwan (Formosa) | 1,012,000 | 1,012,000 | 1,012,000 | 1,012,000 | 1,012,000 |
| Grand total | 7,677,266 | 7,900,132 | 8,097,815 | 7,961,004 | 7,560,713 |

| Routes and companies. | 1919 | 1920 | 1921 | 1922 |
|---|---|---|---|---|
| | *Yen.* | *Yen.* | *Yen.* | *Yen.* |
| Europe: Nippon Yusen Kaisha. | 1,569,672 | 1,368,931 | 1,731,331 | .......... |
| North America: | | | | |
| Puget Sound—Nippon Yusen Kaisha; Osaka Shosen Kaisha. | 2,509,186 | 2,651,783 | 1,694,809 | 1,866,950 |
| San Francisco—Toyo Kisen Kaisha | | | | |
| South America: | | | | |
| West Coast—Toyo Kisen Kaisha | 269,350 | 639,815 | 1,613,021 | .......... |
| East Coast—Osaka Shosen Kaisha | | | | |
| Australia: Nippon Yusen Kaisha | 188,496 | 194,533 | .......... | .......... |
| South Sea: | | | | |
| Java—Nanyo Kisen Kaisha. | 220,000 | 75,000 | 370,000 | 370,000 |
| Java-Bangkok—Osaka Shosen Kaisha | | | | |
| China: Nisshin Kisen Kaisha. | 437,000 | 437,000 | 437,000 | 437,000 |
| Dairen: Osaka Shosen Kaisha. | 100,000 | 100,000 | 180,000 | 180,000 |
| Shanghai: Nippon Yusen Kaisha | 215,000 | 107,500 | 215,000 | 107,500 |
| Various | 791,166 | 877,033 | 1,161,134 | 917,000 |
| Total for Japan proper | 6,299,870 | 6,451,595 | 7,402,295 | 3,878,450 |
| Chosen (Korea) | 290,252 | 362,449 | 881,878 | 870,269 |
| Taiwan (Formosa) | 1,012,000 | 1,012,000 | 1,012,000 | .......... |
| Grand total | 7,602,122 | 7,826,044 | 9,296,173 | 4,748,719 |

Coast), and to Australia are attributed to changes in legislation effected by the budget bills of 1921 and 1922, which authorized extra budgetary obligations not to exceed annually 1,450,000 yen to subsidize the carrying of mails for the fiscal year ended March 31, 1921, not to exceed 5,569,224 yen for the fiscal year ended March 31, 1922, and for the fiscal year ending March 31, 1923, not to exceed 3,217,192 yen—this last named amount to be applied solely to the lines to North and South America.

In the tabulation, the amount assigned in 1921-22 for bounties to North America is the general bounty to the Toyo Kisen Kaisha line from Yokohama to San Francisco, and it is understood special mail pay is not included. The Nippon Yusen Kaisha line to Puget Sound is not included in the table for 1921-22, because its arrangement under the new mail system provides, in addition to 420,000 yen annually, an indeterminate sum based on the amount of mail carried and the number of nautical miles it is carried. The initial rate is 33 sen (16 cents, U. S.) per mile for 100 cubic feet (a net ton) of the ship's space devoted to the mails, and this rate is gradually reduced to 2 sen (1 cent) per mile for each 100 cubic feet, if 1000 cubic feet or more are assigned to the mails. The distance from Yokohama to Seattle is 4500 miles, so the average payment for the trip would be 90 yen ($45) for each 100 cubic feet devoted to the mails. The outward voyage of the line to Honolulu, Mexico and Chile is 9700 miles, so the mail payment would be $97 per 100 cubic feet for the voyage.

This novel basis of payment for ocean mail transportation is somewhat similar to that adopted lately by the Canadian government to pay for its mail transportation to the United Kingdom. The Canadian Post-office Department pays 50 cents per cubic foot for space actually occupied by these mails, not to exceed 25,000 cubic feet, on each voyage to the United Kingdom. This, of course, is equivalent to $50 per 100 cubic feet for a voyage of somewhat less than 3000 miles, compared with the Japanese payment of $45 per 100 cubic feet for 4500 miles. The Canadian mail payment cannot exceed $12,500 a voyage, and the annual expenditures are about $200,000. The government has the advantage of the most expeditious routing of its mails.

### Effect of Change in Policy

The purpose of the Japanese change seems to be the relief of mail steamers from the government's power to fix freight and passenger rates under the Navigation Bounty Act; and it is not improbable, in view of the workings of the existing bounty system during the war, that the system of mail bounties may be further extended so as in time entirely to supersede navigation bounties.

The complaint was made by subsidized operators during the war that they were unable to take advantage of favorable opportunities because of the policy of the government to keep freight rates on subsidized vessels as low as possible. Whenever the demand for space on any particular line exceeded the supply of subsidized space, the tramp rate was always higher than the rates authorized by the government on subsidized vessels—the former rate from Kobe to Liverpool during the greater part of 1918, for example, being ten times higher than the latter. Instances frequently occurred of tramps paying for themselves, in spite of the high cost of vessels, by the profits of one trip to Europe. Probably with a view to promote the nation's commerce and its welfare as a whole, the government consistently refused to permit more than normal increases in rates, so that during the period of high rates the profits realized from the operation of subsidized vessels were practically negligible.

The payment of subsidies for the carrying of mail appears to be an attempt to remove this source of dissatisfaction, as it is understood that the authorization of extra-budgetary mail pay in 1920-21, 1921-22 and 1922-23 was given to the government independently of the Navigation Bounty Law, so that the government may not exercise the same control over passenger and freight rates that it did under that law. The extra-budgetary allowance, not to exceed 5,569,224 for the fiscal year 1921-22, added to the 4,745,719 yen in the table, would give upward of 10,000,000 yen for the navigation and mail subsidies for the year ended March 31, 1922; but the precise amount cannot be stated, because as yet there is no return on the amount of the extra-budgetary allowance which was expended.

### Budget for 1922-23

The budget for 1922-23 provides 6,748,605 yen for subsidies, and the extra-budgetary allowance to be applied as mail pay solely to the lines to North and South America, as already stated, is 3,217,192 yen—in all 9,965,797 yen, or approximately $5,000,000.

# THE CITY OF HONOLULU

## What the Radio Corporation of America Did in Calling Immediate Assistance to Liner Afire in Mid-Ocean is Narrated in Detail

NO more remarkable episode has been recorded in marine history of recent years than the burning at sea October 12 of the Shipping Board steamer City of Honolulu and the subsequent rescue of 262 persons, comprising passengers and crew, from small boats in mid-Pacific, through the instrumentality of the wireless network of the Radio Corporation of America.

The destruction of the vessel occurred on her homeward trip from Honolulu to Los Angeles. The fire was of undetermined origin. It was discovered shortly after midnight October 12, and within a few hours, despite efforts by Captain H. R. Lester and the ship's officers, the vessel was completely ablaze. Yet so rapidly did the radio perform its work that every soul aboard was saved with hardly more inconvenience than would be occasioned by a mid-ocean transfer.

### Alarm at 5:41 A. M.

The City of Honolulu was equipped with standard navy type wireless apparatus of the Radio Corporation of America, rated at two kilowatt capacity. The radio staff included Chief Operator Walter P. Bell, Second Operator H. D. Hancock and Third Operator H. C. Kumler. The work of these men in establishing communication with the main Pacific Coast station of the Radio Corporation at Marshall, California, and with the steamers Enterprise, City of Los Angeles and the U. S. transport Thomas made possible the rapid rescue of the liner's passengers and crew.

Third Operator Kumler was on duty at 5:41 a. m. when he was notified from the bridge that the ship was on fire. He immediately awakened Chief Operator Bell, and a few moments later Second Operator Hancock. Bell took charge of the transmitting work and the others maintained a messenger relay service between the radio room and the bridge.

### General Call at 5:56

At 5:56 a. m., acting under orders from Captain Lester, Bell sent out a "CQ," or general call message to all ships, announcing that there was a fire aboard ship, and asking all vessels to listen for a position report. At that time the City of Honolulu was 1300 miles from Honolulu and 700 miles from the nearest Pacific Coast point.

At once from KPH station, the Radio Corporation radio center at Marshall, came back the acknowledgement of the call with a request for details. Bell replied that he had none yet. Immediately KPH station took charge of the air, sending out a "QRT," which is a general order to all ships to "cease sending." The naval station at Goat Island followed with a similar order to all navy vessels.

Two minutes after the "CQ" call, Chief Operator Bell sent the position of the City of Honolulu. It was immediately acknowledged by the steamer Enterprise, the steamer City of Los Angeles and the U. S. Army transport Thomas, each giving its position. With vessels and Marshall in direct touch through the network of the radio, Bell waited for further orders from the bridge.

### In Constant Touch

From that moment onward until it was abandoned, the City of Honolulu was in constant touch by radio with the Marshall station and the vessels named. At 8 o'clock, with the fire rapidly gaining headway, it was decided by Captain Lester to abandon ship. Of the 262 persons aboard, only 75 were passengers, and there were ample lifeboat accommodations for all.

Half an hour later, at 8:30 a. m., Chief Operator Bell was instructed to send out an official "SOS," which he did. The Enterprise, whose wireless operator had been constantly "on the air", immediately answered.

"Come to our aid at once!" flashed Bell.

"Coming!" replied the Enterprise.

Swinging off course, under forced draught, the Enterprise started for the given position of the City of Honolulu, latitude 31.07 north, longitude 131.40 west.

### A 35-Degree List to Starboard

In the meantime the ship's officers were giving their attention aboard the City of Honolulu to getting the passengers off safely. The steamer had listed heavily to starboard by that time, tilting at a perilous angle of approximately 35 degrees and giving rise to the fear that a heavy sea might capsize her.

At intervals thereafter, Chief Operator Bell was in touch with the Enterprise and the Radio Corporation station at Marshall, answering queries and keeping himself apprised of the speed that the Enterprise was making in the direction of the burning vessel. His fellow operators, after Captain Lester left the bridge, stationed themselves at the lifeboats and aided in the work of getting off the passengers.

At 9:58 a. m. came the beginning of the end when Chief Operator Bell flashed a terse message: "All left but captain, chief officer, chief engineer and myself."

A few minutes later he accepted a shore message, returning the answer to the Marshall station with the farewell: "Leaving ship now; good bye!"

The operator was one of the last to leave the burning vessel, getting away with ship's officers in the last lifeboats to be swung down from the craft, which by that time was aflame.

The sea was comparatively smooth, and the twenty lifeboats in which the castaways had been rescued remained in the vicinity of the wreck, watching what had been a once palatial liner burn to a charred hull. The City of Honolulu's steward had provisioned the lifeboats with roast chicken and other delicacies from the vessel's "mess", and had even placed cigarettes aboard. There was plenty of water, and passengers understood that the wireless had brought aid in their direction. There was no panic.

In the meantime the freighter West Faralon had been notified of the fire. Being the nearest to the spot, she turned off course and rushed to the rescue, full speed ahead. She reached the circle of lifeboats at 4 o'clock that afternoon, to be greeted with tears and cheers by the survivors, who were promptly taken aboard and given every attention within the power of the freighter's personnel.

### Taken on Board Transport

At dawn the next morning, the transport Thomas, which had been in constant touch by radio, overtook the West Faralon and the survivors were transferred to the more commodious transport, where food, clothing and medical attention were furnished and every courtesy afforded them. Under special government orders, the Thomas was diverted from her normal terminal port at San Francisco and the survivors were taken to Los Angeles.

# AN EFFICIENT BUNKERING PLANT

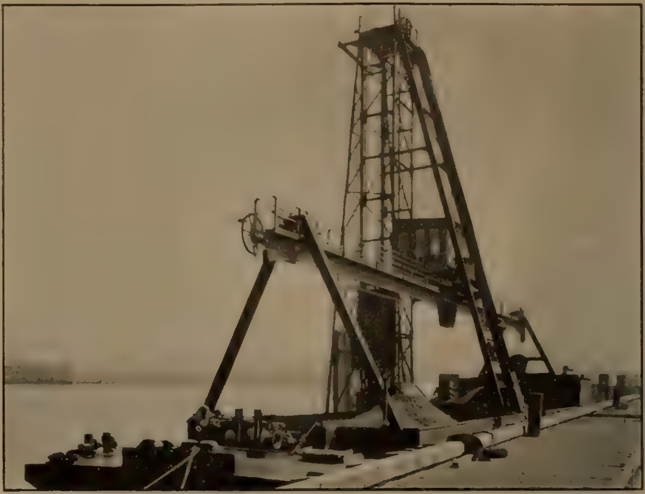
## A Description of the Yard of the Standard Coal Company on the Oakland Estuary. Storage Provided for 100,000 Tons of Coal

IN the November, 1920, issue of Pacific Marine Review was published an article describing two hulls for coal barges which were then building on the south side of the Oakland Estuary on ground belonging to the Standard Coal Company. Today the Standard Coal Company has at that side what is probably the best equipped coal bunkering, distributing and storage yard on the Pacific Coast.

This yard has been surfaced with a thick concrete floor 700 feet long by 350 feet wide, giving a total storage capacity for approximately 100,000 tons of coal. This floor is spanned by a crane of the bridge gantry type, which has a travel over the full length of the yard on tracks of 200-foot gauge. The bridge of the crane, including the overhang on both ends, has a total length of 361 feet. The trolley on this bridge carries an electrically-operated grab bucket with a capacity of 5000 pounds and a lifting and traverse operating speed capable of handling more than 100 tons of coal an hour. The outboard overhang takes the trolley to a point where it can easily load or unload directly into or out of the hatches of deep-sea vessels alongside the bulkhead. At the present time there is in storage on the concrete floor over 15,000 tons of coal.

The two barges have been named Arthur A. Sweet and Zerah Castle. Each of these barges has approximately 1000 tons' carrying capacity and is equipped with an overhead trolley, an automatic weighing attachment and an elevator for passing coal to chutes on the side of the vessel or to overhead bunkers. This machinery is operated electrically, power being supplied by 80-horsepower Atlas Imperial diesel engines directly connected to generators. With this equipment these barges will load and weigh into vessels' bunkers or shore bunkers 100 tons an hour. Two illustrations herewith show very clearly the general lay-out of the yard and the top hamper on one of the barges.

Steel for the barges was sheared and punched to specifications by the American Bridge Company at Ambridge, Pennsylvania; gantry crane and the coal-handling machinery on the barges were supplied by Heyland Patterson, Inc., Pittsburgh, and the power plants on the barges were supplied by the Atlas Imperial Engine Company of Oakland, California. The J. G. Williams Construction Company of San Francisco built the barges and installed the machinery.

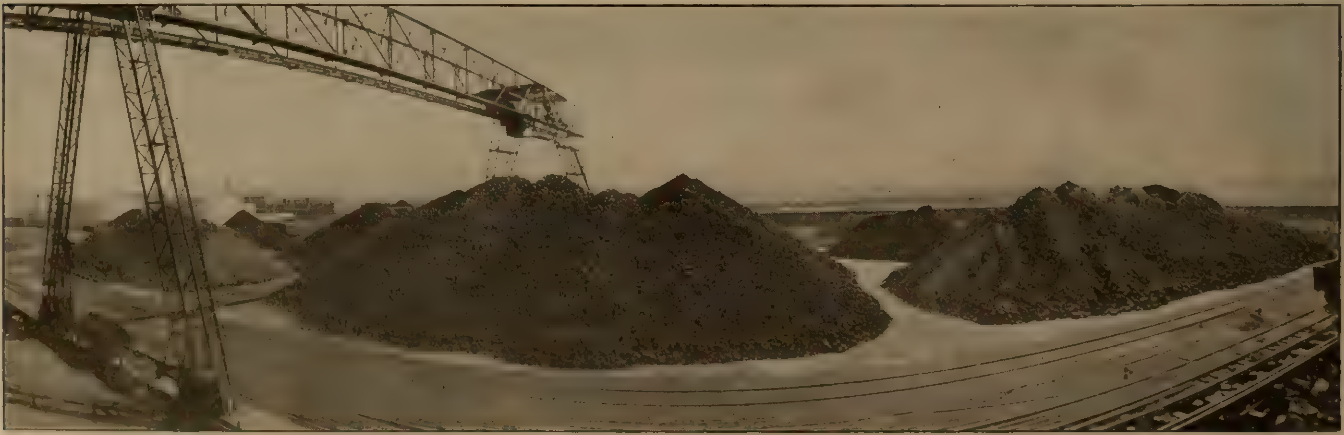


View of one of the coal handling barges of the Standard Coal Company. This barge easily weighs and loads into the ship's bunkers 100 tons of coal an hour

The completeness of this coal-handling plant and the control of a fleet of trucks, tugs and launches allows the Standard Coal Company to give a very high grade of coal supply service to all coal consumers, from the bunkering or loading of an ocean-going steamer down to the domestic consumer who buys a sack at a time.

## FIRE COMMITTEE TO MEET

A MEETING of the committee on docks, piers and wharves of the National Fire Protection Association will be held at 9:30 a. m., December 12, in the rooms of the National Board of Fire Underwriters, 78 Williams Street, New York City. Members of committees of organizations that have been working with the committee on docks, piers and wharves have been invited to attend. The call issued by Charles H. Fischer, chairman, reads in part as follows: It is expected that this meeting will be the most important meeting of the committee up to this time, because the special committees of the six kindred organizations which are considering this report will be invited to have representatives present. It will be of interest to you to know that the committee of the American Society of Civil Engineers has recently devoted a two-day session to this report.



A recent view of the storage yard of the Standard Coal Company, showing the gantry crane and 15,000 tons of coal piled on the concrete floor

# THE MATSON CAFETERIA AND LAUNDRY

THE Matson Navigation Company has recently installed on its San Francisco dock a cafeteria for employes and officials, and a laundry for taking care of the trip wash on its Honolulu liners.

The cafeteria, which is said to be the only employes' cafeteria on a dock in America, is equipped with an excellent kitchen located between two dining rooms, the one shown in the illustration, which is for the officials, and a larger dining room for dock employes. Good meals are served at cost, and the service has become popular on the dock.

### Saving Made by the Range

One of the most interesting parts of the equipment is the kitchen range. This stove is the Ingle, manufactured by the Ingle Manufacturing Company of San Diego and distributed by McDonald & Moore Company of Oakland, and is served by a Valjean oil burner, a description and illustration of which will be found in another article in this issue of Pacific Marine Review. This burner has been installed on five of the Matson vessels and it is the testimony of accurate records kept over several trips that the six burners, one in the cafeteria and five afloat, are using less fuel to produce better results than four of the forced draft burners previously used. The cafeteria is equipped to serve, and does serve, all of the dock employes, longshoremen, and officers and crews of vessels alongside the docks, food being supplied at cost.

The laundry, situated on this dock, is an interesting electrically-operated plant, especially adapted for flat work. It takes the towels, bedding, napkins, table cloths and (the only special work) waiters' jackets from the liners as they come in. With a capacity of 7000 pieces to the eight-hour shift, it is a comparatively simple matter for the laundry force to have the entire wash from any one liner ready on her sailing date.

### Work of the Laundry

The Matson Navigation Company's schedule on its freight and passenger liners usually works something like this: the liner berths at San Francisco; discharges passengers, cased pineapple and bananas, and laundry; then runs to Crockett to discharge her sugar at the refinery; she is usually at Crockett from two and one-half to four days, drops down the bay to take on fuel oil, then goes to the San Francisco dock to take on general cargo and passengers.

The Matson Navigation Company's laundry on its dock in San Francisco

The laundry is thus given from four to six days for its run on any one vessel, and it has a record of having put through 37,000 pieces of laundry in four and one-half eight-hour days. It is equipped with machinery manufactured by the American Laundry Machinery Manufacturing Company, consisting of two Cascade washers, one special washer, two dry tumblers, two centrifugal extractors, one American press, and one American six-roll flat mangle. This mangle has a capacity of from seven to ten sheets per minute. Aside from washing linen more cheaply, another saving, which is greater, is in a reduced wear of the linen.

The Matson Navigation Company's cafeteria on its dock in San Francisco

# THE GENERAL ENGINEERING EXPANSION

## Well-known Pacific Coast Shipbuilders Purchase Barnes & Tibbitts Yard at Alameda, California. Will Increase Facilities for Repairing Vessels

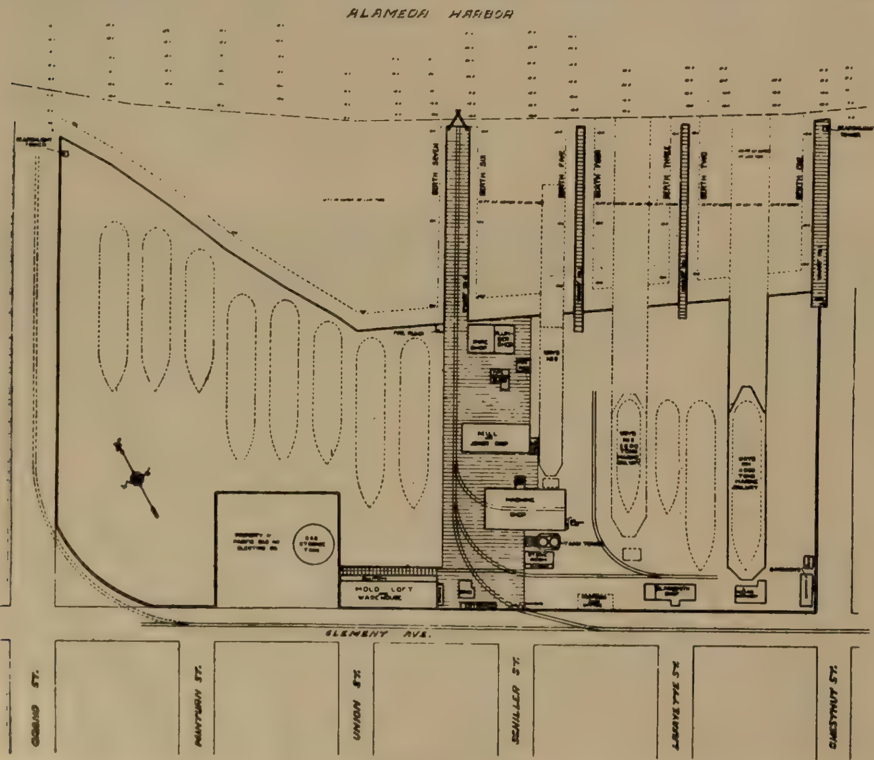
THE General Engineering Company has recently closed negotiations by which it merges itself into a new organization to be known as the General Engineering & Drydock Company. In making this reorganization the new company has come into active possession of the Barnes & Tibbitts Shipyard in Alameda, which gives it very excellent drydocking and pier facilities for the furtherence of the ship-repair business. The new organization has practically the same officers as the General Engineering Company. George A. Armes is president, J. F. Mooney is vice-president and general manager, J. R. Young is secretary and treasurer, Frank Fox is superintendent of machinery and engineering located at the San Francisco plant at the foot of Battery Street, and John McGee is assistant superintendent of machinery and engineering located at the new yard in Alameda.

Marine railways at the General Engineering yard

### Facilities to Be Increased

Plans are now actively under way to increase the facilities at the shipyard and particularly to build up a good organization and equipment for the handling of repairs to steel ships. At the present time there are two marine railways, as indicated on the plan reproduced herewith, No. 1 being nominally of a lifting capacity of 4000 tons and No. 2 of 2500 tons. In the design of the hauling-out gear of these marine railways liberal factors of safety were used and in actual practice No. 1 has handled easily a deadweight of 4250 tons and No. 2 has hauled out hulls weighing 3200 tons. The No. 1 way has at the present time a length over keel blocks of 315 feet and an average operating depth of water of 18 feet forward and 23 feet aft. This dock is to be lengthened in the near future with an additional 54 feet of cradle.

Both docks are operated by electric motors, No. 1 with a 300-horsepower motor and No. 2 with a 200-horsepower motor. In order to take full advantage of the contract conditions for electric current prevailing in Alameda these two motors are also connected up to compressors which give a large supply of compressed air. This compressed air is used as largely as possible throughout the yard for power, the outfitting docks being fitted with pneumatic winches and all ships and docks having compressed air mains with numerous outlets. This arrangement under the existing power contract system makes a very economical installation.



Plan of the General Engineering yard

Another feature of interest in connection with this method of driving the compressors is that of compression braking on run out of the dock cradles, in which advantage is taken not only of the generative braking in the dynamos but also of the retardation due to compression in the compressor cylinders.

### Equipment of the Yard

The shipyard comprises some 26 acres with almost a quarter-mile of railway frontage and more than a quarter-mile water frontage. The buildings now on the site include a machine shop, a plate and boiler shop, pipe shop, sheet metal shop, blacksmith shop, mill and joiner shop, mold loft and warehouse. There are four wharves more than 300 feet long, each all piped for compressed air, equipped with shear legs of 50 tons' capacity, several small shear legs, and a locomotive crane, and all having 23 feet of water alongside at average tide. The plant has a deep well and pumping plant, with a capacity of 2500 gallons an hour. Storage tanks, 90 feet in the air with 20,000 gallons' capacity, give ample head on the fresh water mains with hydrants in all parts of the yard. Salt water mains operated by large fire pumps worked by compressed air provide double insurance. In addition there is a connection to the city mains.

There is a complete acetylene burning and welding equipment and a fair equipment of the standard machine tools, both portable and stationary. With the additional equipment which is now being installed, the plant is in readiness to undertake all ordinary engine and hull repairs for any vessels now entering San Francisco harbor. The shipyard is especially well equipped with rail connections with the Alameda Belt Line. These extend into or alongside every building and to the end of every wharf.

### Sidewise Ways Planned

The illustrations and plan herewith will give an excellent idea of the present condition of this plant and of its possibility as a shipbuilding site. The company contemplates the immediate addition of sidewise launching ways to its larger marine railway so that ships may be hauled out, skidded upon these ways and repaired at leisure while the railway itself is being used for other work, thus offering to its clients the opportunity for avoiding high dock charges. Plans are under consideration for the building of a graving dock at the west end of the yard for the working of vessels that are too large to handle on the marine railways.

Adapted in physical equipment to handle promptly and with economy any ship-repair work, this plant has back of its equipment a fine personnel. President George A. Armes has earned a great reputation for successfully putting over large projects, and a thorough first-hand knowledge of shipbuilding and ship-repair problems. J. F. Mooney and J. R. Young are both practical steel-ship men and were the backbone of that record-breaking organization which put Skinner & Eddy over the top in the building of ships for the Emergency Fleet Corporation. These three men are united in the determination to make ship-repair history on Alameda harbor.

The General Engineering yard at Alameda, California

## Page Freight Report

San Francisco, November 14, 1922.

Since our last report under date of October 17 space on barley from San Francisco and wheat from the Northwest to the U. K. and usual Continental range of ports has advanced from 35/- to 37/6 and the full cargo rates have touched the same figure. At the present writing practically nothing is being done in barley shipments, although the strength still continues in wheat from the North. Full cargo fixtures have been reported as follows: the Japanese steamers Atlantic Maru and Chifuku Maru at 36/3, an unnamed steamer at 36/9, and the small British steamer Benarty at 38/9, all taken by Kerr, Gifford & Company; the British steamer Welsh City at 37/- by the Northern Grain & Warehouse Company; the Havre Maru at 36/- by Gray-Rosenbaum Company; a Japanese steamer at 36/9 by Balfour, Guthrie & Company; a Japanese steamer at 37/6 by the Alberta Pacific Grain Company; two other Japanese steamers at 37/-, charterers not named; the British steamer Woron by Strauss & Company at 36/10½ for barley.

In lumber for Australia the schooner Eric was fixed for Brisbane and Hexham by the British Columbia Mills Timber & Trading Company, terms private; the British steamer Orteric by J. J. Moore & Company for three ports Australia at $13.50. The same charterers have taken the Canadian steamer City of Vancouver, terms private, as also the schooner Forest Home for New Zealand, terms private. W. L. Comyn & Company are sending their own steamer Pequot to Australian ports for their own account.

The only fixture reported for the West Coast of South America is the schooner James Tuft to load lumber from Port Alberni to Callao at $14 by W. L. Comyn & Company.

The Norwegian steamer Hallgyn is taken by the Southern Alberta Lumber & Supply Company for a full cargo of lumber from British Columbia to two ports north of Hatteras at $14.50, and Charles R. McCormick & Company are reported as having taken the American steamers Munaires, Munrio, Mundelta and Carolyn, and one other steamer, the rates on which have not been reported.

Coal importations from Australia to this coast dropped off considerably, and we have no new fixtures to report. The sailing ship Glenard has been fixed for coal from Newcastle to two ports Peru at 22/6. The schooner Undaunted has been fixed for the same business to J. J. Moore & Company, terms private. W. L. Comyn & Company fixed their steamer Ida to load case oil from Port Arthur to Japan and China, private terms.

The tanker Playa is reported sold to the Associated Oil Company by the Union Oil Company on a basis of $50 a deadweight ton.

Although chartering in general has been anything but good for many months past, business is even quieter at the present time, and we see little prospect for improvement in the near future.

PAGE BROTHERS, Brokers.

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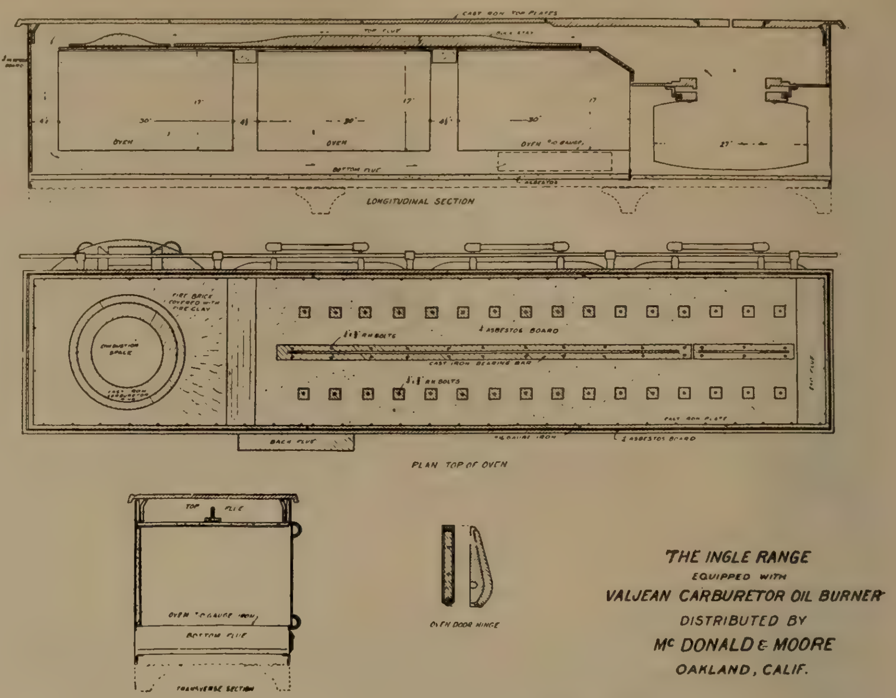
**Kenneth M. Walker,** marine surveyor, consulting engineer and naval architect, has taken full charge of the business of his father, the late Frank Walker, and will conduct the business under the name of **Frank Walker,** Central building, Seattle.

# THE INGLE GALLEY RANGE

## Stoves Have Excellent Records in Burning Anything from Heavy Oil to Gasoline. Carburetor Makes for Marked Fuel Economy.

IN another part of this issue of Pacific Marine Review in an article describing the cafeteria of the Matson Navigation Company on its dock in San Francisco is a reference to the galley ranges supplied to that cafeteria and to the Matson Navigation Company's vessels by the Ingle Manufacturing Company of San Diego, California, through its distributors, McDonald & Moore, Oakland, California.



Reproduced herewith are two illustrations showing the construction of these stoves and of the carburetor, which is largely responsible for their splendid record in fuel economy. The operation of these stoves and the carburetor is extremely simple. The carburetor oil burner consists of a steel cylinder with a concave bottom and a partially opened top, being attached at the opening to a heavy cast iron ring. This ring slides into the stove on an angle iron track and for combustion purposes is fixed in a location so that its opening lines up with an opening of equal diameter in the cast iron plate that forms the bottom of the combustion chamber in the stove. For lighting, the carburetor is pulled out and an average size newspaper put into the drum and lit with a match. The carburetor is then pushed back into place and the fuel, anything from crude oil to stove distillate, or even gasoline, is turned on and allowed to drip into the nozzle, which drops it over the edge of the opening in the ring. The carburetor apparently converts this oil into gas and through a series of scientifically proportioned and located holes in the steel drum mixes the gas with the proper quantity of air to make the best possible mixture for the most efficient heating. The operation is noiseless, safe and extremely satisfactory.

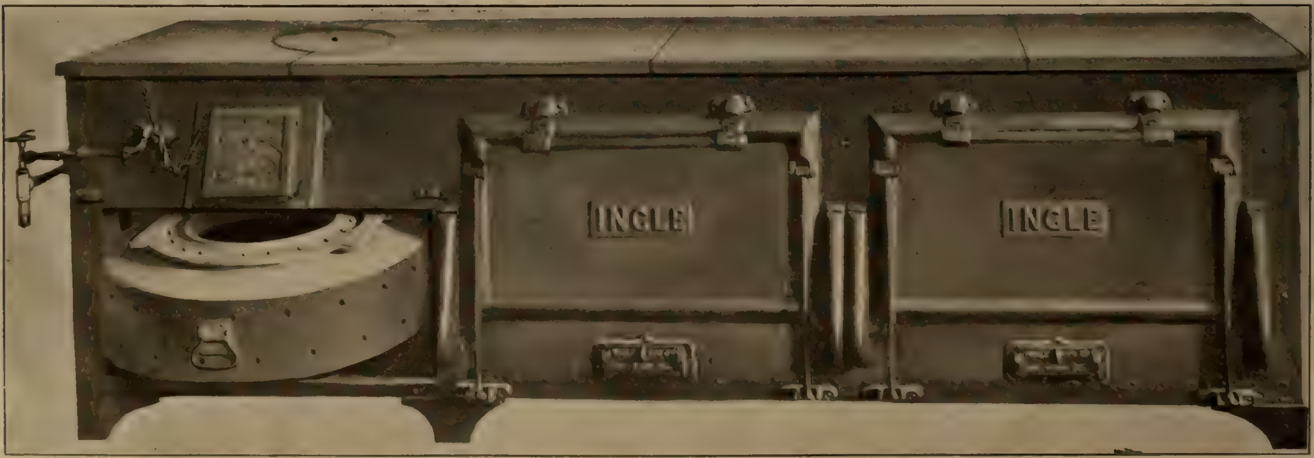
It will be noted from the plan and elevation that the design of the Ingle range is along very simple mechanical lines, which make for greater economy in the use of hot gases. The chefs who have used these stoves are unanimous in their praise of the baking qualities of the ovens and the speed with which top heat can be obtained for quick action and short orders.

A great deal of interest has been registered lately on the part of steamship operators in the operation of this stove and quite a number of replacement installations have been made.

### MISHAPS OF A YEAR

A report made by the Kobe Shipping Exchange states that Japanese steamers that met mishaps last year numbered 24 and were of a total tonnage of 55,341; wooden vessels numbered 24 with a total tonnage of 13,484. Details are as follows:

| Nature of Accident | Steamers No. | Steamers Tons | Wood Ships No. | Wood Ships Tons |
|---|---|---|---|---|
| Stranding | 17 | 37,641 | 9 | 3,969 |
| Storm | 3 | 6,270 | 7 | 5,318 |
| Missing | 3 | 6,630 | 1 | 649 |
| Fire | 1 | 5,800 | 2 | 578 |
| Flooding | None | | 2 | 1,856 |
| Collision | None | | 3 | 1,114 |
| Total | 24 | 55,341 | 24 | 13,484 |



A view of the Ingle range, showing the carburetor

# MARINE INSURANCE

**CHARLES F. HOWELL, Eastern Contributing Editor**
**J. E. SHERBURNE, Western Contributing Editor**

## On the Atlantic

### Rubber Coverage Increases

It is surprising to observe how intimately marine insurance reacts to any commercial impulse throughout the world. This has been commented upon in these columns from time to time, and now comes another striking illustration of the close relation between this branch of underwriting and general market conditions. Followers of the rubber industry have, for the past year, been puzzling over the unsatisfactory status of that commodity and endeavoring to find some remedy for the situation. Rubber production has been greatly in excess of the demands of the trade and, with business in a state of depression, manufacturers have been unable to work off their enormous stock reserves. This has affected a considerable element of American business life because of the fact that three-quarters of all the rubber produced in the world is regularly absorbed by the United States. A solution of the problem has just been found. The production is to be restricted to 60 per cent in the output of British Far East plantations, a source of the major portion of the best product. The immediate effect of this movement was to jump the price of rubber up 6 or 7 cents per pound. What was the instant result? Rubber importers with policies in the United States lost no time in getting in touch with their underwriters in order to increase the coverage on all of the commodity afloat in which they had an interest. It is the custom to insure such increased values free of claim for prior loss or damage, and if covered by underwriters other than the original insurer the additional insurance is accepted warranted without benefit of salvage. This warranty works to the serious disadvantage of the underwriter who insures only increased values, as in the event of constructive total loss the original underwriter receives the salvage, whereas the underwriter on increased values pays a total loss without benefit of salvage. Thus the solution of the rubber trade problem at once involves another on the part of the insurance company.

### New British Theft Rules

Nineteen months of test has convinced British underwriters that their scheme of issuing a 75 per cent clause in the writing of theft and pilferage can no longer be made effective. Pressure against it has been constant on the part of shippers, and there has been an increasing inclination on the part of certain underwriters to get around the clause or else ignore it altogether. The result has been a scrapping of the old clause and the substitution of a new one in which the 75 per cent arrangement has no place. The purpose of the new plan is to afford a standard basis for quotations, and along this line much is hoped from it. There appeared to be no better way of meeting the situation, and yet it is freely admitted that the new scheme lets the bars down to an influx of unprofitable writing. The new clause retains exactly the language of the old one, with the exception of deleting the 75 per cent agreement and substituting for "shipping value" the words "shipping or insured value, whichever is the smaller." The wording of this new clause is as follows:

"(a) It is hereby agreed that this policy covers the risk of theft and/or pilferage irrespective of percentage, but underwriters' liability in respect of any goods so lost not to exceed their shipping or insured value whichever is the smaller. No liability for loss to attach hereto unless notice of survey has been given to underwriters' agents within ten days of the expiration of risk under the policy.

"(b) It is hereby agreed that this policy covers the risk of non-delivery for which the liability of the shipowner or other carrier is limited, reduced or negatived by the contract of carriage by reason of the value of the goods, but underwriters' liability in respect of any goods so lost not to exceed their shipping or insured value whichever is the smaller."

The term "shipping value," as employed above, means the prime cost of the goods to the assured by whom, or on whose behalf, the insurance is effected, plus the expense of, and incidental to, shipping and the charges of insurance. Underwriters to be entitled to any amount recovered from the carriers or others in respect of such losses (less cost of recovery, if any) up to the amount paid by them in respect of the loss.

### Insurance on S. B. Vessels

Underwriters' subcommittees on the rating of Shipping Board vessels for cargo purposes are all through with their work and have turned in their reports. The consolidated report has gone to the Shipping Board. A number of operators have been granted liner rates in particular trades, and all old-established operators have been given "approved steamer" ratings. It is a condition of the recommendations of the underwriters' committee that they shall remain in force only so long as the vessels operated by the several Shipping Board agents are maintained in a condition of upkeep that meets with the approval of the United States Salvage Association and are not loaded beyond their assigned marks. To this the Shipping Board has agreed.

For the information of the underwriters, arrangements have been made with the Salvage Association to issue periodical bulletins advising the names of the ships in the hands of the various operators that may be approved by it for the classification provided by the report of the underwriters' committee. Notice of the withdrawal of such approval and also of any instances of overloading will be sent out promptly through proper channels of information.

In view of the effort of the present managers of the Fleet Corporation to increase the efficiency of their operating agents and to promptly meet the reasonable requirements of the United States Salvage Association, of which ample evidence has already been had, and also because of their promise to extend to cargo claims consideration equally prompt and equitable with that executed by their privately owned and operated competitors, an earnest hope is expressed by the committee that the various cargo underwriters will recognize the improved conditions by adopting the recommendations.

### 1922 Losses Low

Up to the present time marine underwriters of this country find themselves in position for congratulation upon the favorable results of the year. To date 1922 is notable

FIREMAN'S FUND
Insures Hulls, Cargoes,
HEAD OFFICE: CALIFORNIA AND SANSOME

JOSEPH HADLEY, European Agent
3 LOTHBURY, E. C.
LONDON

E. A. VALENTINE, Resident Agent for Oregon
714-715 BOARD OF TRADE BUILDING
PORTLAND, ORE.

FRANK G. TAYLOR, MANAGER, PACIFIC NORTHWEST BRANCH

for the small number of serious losses, both on the sea and the Lakes; and this experience, taken in conjunction with a more careful handling of cargo, has made for a low loss ratio. However, underwriters are permitting themselves the luxury of undue enthusiasm. The unescapable law of average may not be disregarded. Their experience during the last few years tempers optimism, and there is little likelihood of rates being so reduced as to leave little if any surplus for the period of heavy losses that may lie just ahead. Rates on many classes of cargo are below the pre-war level, notwithstanding the unsettled conditions prevailing in many parts of the world. It is urged by many that a standard tariff, observed by all, might serve to prevent the consequences which some are bound to suffer as a result of the present rates.

## Burlap Rates Cut

Burlap, which is insured under a tariff agreement, is the latest commodity to bring a threat of a rate war. It is said that one company of the association has made decided cuts in the rate on burlap and is instituting a raid upon the accounts of other members of the group. In order to forestall this assault, according to reliable information, a committee of underwriters has been appointed to investigate the matter and recommend at a general meeting that every company take action to meet the proposition of the offending member. The consequence of such an arrangement will be that the rate-cutter will have gained nothing by his campaign other than to have brought down upon the heads of his fellow members the probability of the serious loss of profit represented by the difference between the present rate and the one to which they will descend. Nor may it be forgotten that while it is easy enough to reduce a rate it is very difficult to restore it to its former level.

## New British Certificate Decision

There is a comfortable feeling of vindication among American underwriters in consequence of the recent decision of Justice Sankey of the King's Bench Division of the English Court, that a certificate of insurance is a valid tender when substituted for a policy. This opinion neutralizes the position taken by Justice McCardie of the same court a year ago, when he undertook to throw into the discard the American use of the certificate, a practice that had worked out to the complete satisfaction of shippers and derwriters for more than a half century. It had proved to be a great time-saver and an admirably plastic instrument of trade. The Sankey decision therefore leaves the matter just where it was before, barring the uncomfortable feeling that an occasional shipper or banker may entertain as to just exactly where he stands in making use of the certificate.

The Sankey decision was rendered in a suit brought by Donald H. Scott & Company v. Barclay's Bank, Ltd. Those who may desire to read the full text will find it on pages 502-506, Part No. 7, Volume 12 of Lloyd's List Law Reports, August 17, 1922.

In the course of his judgment Justice Sankey observed: "The first thing I have to decide, I think, is this: What in law is an approved policy? I think an approved policy means a policy to which no reasonable mercantile objection can be taken. Applying this test to the point that this was a certificate as distinguished from a policy, was this document a policy to which no reasonable mercantile objection could be taken?" He then reviewed the two decisions on the point, the one by Justice Bailhache and the one by Justice McCardie. He quoted Justice Bailhache as saying: "It must be borne in mind that in dealing with certificates of insurance I am not referring to American certificates of insurance, which stand on a different footing and are equivalent to policies, being accepted in this country as policies." Referring to the McCardie decision Justice Sankey contented himself with observing: "He ventures to disagree, I think, with the view which was taken by Mr. Justice Bailhache and the view taken by the writer of the note, whoever it was, in Scrutton on Charter-parties, 10th Ed., p. 185, note (e)."

The Sankey decision, after a review of all the authorities and the evidence given by experts on certificates in America, was briefly as follows:

"I find that the certificate was a policy within the definition I have given to which no reasonable mercantile objection could be made on the point of it being a certificate as distinguished from a policy."

A further objection to the certificate in that it was a "dollar" insurance against a sterling letter of credit was also swept aside by the judge. As both of these decisions are of equal rank, both being of the King's Bench, it remains for some higher authority in the English courts to definitely settle the controversy. It may be added here that the use of the popular certificate does not appear to have been materially restricted in consequence of the position taken by Justice McCardie.

## Effect of the Falling Mark

Continued steady decline in the value of the German mark is causing more or less anxiety among those assured who are covering their marine risks under open policies in Germany. The Swiss government has taken steps looking to the protection of its citizens who are insured by German policies. Odd as it may seem, many importers in the

INSURANCE COMPANY
Freights and Disbursements
STREETS, SAN FRANCISCO, CALIFORNIA

W. H. WOODRUFF, Manager, Southern California Marine Branch
740 SOUTH BROADWAY
LOS ANGELES

CHARLES R. PAGE, Manager
ATLANTIC MARINE DEPARTMENT
72 BEAVER STREET NEW YORK

309 COLMAN BUILDING, SEATTLE, WASHINGTON

United States are covered by contract policies placed in Germany; they believe that the provision contained in such contracts for the payment of loss in United States dollars is all the protection required even under the present unsettled conditions. It should not be overlooked that the fall in the value of the mark reacts directly on all German industries and may very easily lead eventually to a situation that will bankrupt even such German concerns as are at present entirely solvent. This risk, together with the necessity of suing in Germany for recovery under policies when the insurer declines liability, makes it most unwise for Americans to rely at the present time upon German insurance.

### Transit Damage to Flour

The Board of Underwriters of New York has been compiling valuable information relative to port and terminal facilities at Mediterranean points, and is now proposing to extend these investigations to include the Far East, India and Australia. It will probably be several weeks before this work has been completed, but when it is finished underwriters will find it of extreme interest. In connection with this data a valuable light is thrown upon the handling of flour shipments at the chief flour ports of the world. It is interesting to note from this material that the principal damage to flour in transit to Baltic ports is sweat, while on shipments to the West Indies the damage occurs largely from rainwater or seawater while on lighters. Underwriters who cover flour subject to the "all risks" clause complain of serious claims on shipments by oil-burning vessels. The fumes of the oil penetrate to the very center of the bag, thus rendering the flour worthless even for fodder purposes. Flour is peculiarly susceptible to taint from odors; damage from vegetable taint is by no means uncommon.

### News of Eastern Offices

At the recent annual meeting of the American Institute of Marine Underwriters William H. McGee was re-elected president, Louis F. Burke was re-elected vice-president, and Charles R. Page was made secretary and treasurer. Driectors were elected as follows: Walter W. Parsons, Benjamin Rush, Hendon Chubb, W. L. H. Simpson, Louis F. Burke, William R. Hedge, S. D. McComb, W. J. Roberts, C. R. Ebert, G. C. Owens, Samuel Bird, Charles R. Page, and Douglas F. Cox.

The Franklin, of Philadelphia, is opening a Pacific Coast marine department, of which Charles W. Jones is to be manager with headquarters at 104 Insurance Exchange Building, San Francisco.

C. L. Goldby, who has been a specialist in cargo coverage for twenty-one years with the London office of the London Assurance, has joined the underwriting staff of William H. McGee & Company.

The Importers & Exporters has definitely retired from the field of direct marine writing, thus marking the passing of the last of the "war babies."

On account of the slowness in making repairs to the breakwater at Buffalo, underwriters are discouraging the laying-up of vessels at that port during the winter months. An additional premium of ¾ of 1 per cent is to be charged on boats wintering there; this, added to the regular lay-up charge of 25 cents, brings the premium to 1 per cent.

Word comes of a break in rates on tank steamers in England. Despite the fact that there has been little profit in writing this class at 4½ per cent, it is now being freely taken at 3½.

C. F. H.

## On the Pacific

### Rate Schedule Needed

A plea by bankers for a uniform marine policy appeared in a recent issue of a shipping magazine. There is need of such a policy, as well as a standardization of rates, from both the underwriters' and a shippers' point of view.

To accomplish this would mean supplementing existing boards of marine underwriters with appointment of a rate committee to discuss and agree on a schedule of rates to be charged on cargo insurance. This would in a way curb the existing competition among marine insurance companies. It is said that competition is necessary to all business, but as insurance companies are so closely allied with banking institutions, they should follow more closely the example set by banks—that is, by relying upon service and strength of the institution in their quest for business rather than a lower rate of premium.

Marine insurance, which is the oldest form of insurance, has not made the advances and reforms that have been made in other lines of insurance. Consider fire insurance companies which are members of the various fire boards. Under the supervision of these boards, the experiences of the companies are taken into consideration and rates to be charged for certain risks are compiled from this information. Each member upholds these decisions. These boards are not formed for the purpose of extorting money from the public through high fire insurance rates, for if they were they would have ceased to exist long ago. These rates are based on years of experience and are considered adequate to show a profit to the company. Fire insurance companies are thought of as social necessities. This should be extended to include marine insurance companies as well, as they are as essential as banks in the pursuit of overseas commerce.

The formation of a conference or board of marine underwriters with the power to quote rates, which would be lived up to by the members, would in a way destroy individual underwriting opinion. But it would offer in its place the experience of a group of underwriters and an adequate rate for risks written.

Comparing marine insurance companies with steamship companies, and taking into consideration the trans-Pacific trade, carriers have found that the only way in which this trade can be carried on with a profit is through a freight rate that is sufficient and the upholding of this rate by all. To accomplish this end, the members of this conference have posted a deposit that is to be forfeited in the event a member violates his agreement. Charging this uniform toll seems to have been more desirable than the carrying of full cargoes at cut rates. This fact alone could be stretched to include marine underwriters.

It might be said that the formation of a schedule of marine insurance rates to be used by all marine companies would in a way be in violation of anti-trust laws. This would not be the case, as the cost of transportation should be alike to all shippers, and marine insurance surely comes under the cost of transportation.

From a shipper's or manufacturer's viewpoint this uniform schedule should be welcomed. In the marketing of products there are two important items that control the selling price, one being the cost of production and the other the cost of transportation. Under the cost of transportation come freight tolls, duties, etc., and marine insurance charges. Freight and duties are alike on like products to all shippers, but under the existing conditions some shippers enjoy lower insurance rates than others. This condition is unjust. The producer has a certain amount of control over the cost of production, but no control whatever over the cost of transportation. Although marine insurance represents only a small proportion of the costs of goods to the consumer, this difference is enough to give one manuufacturer the advantage over another. In the early days of the railroad the charging of different rates to different shippers was prohibited by legislation and marine insurance companies should take this step to put their clients on an even basis.

The question of rates should be considered secondarily by the shipper, as he is in quest of protection, but the premium is the first thought of the insurance company, as this is the source of its income.

It will be found that companies of equal strength are writing like risks at different rates, but in many cases the underwriter who has been forced through competition to reduce his rates does so with the feeling that it is done to retain the account.

The formation of a conference would also go a long way in abolishing a great many of the risks that marine underwriters are forced to bear, which are not, as a rule, perils of the seas. It would also prevent the presentation of claims that are not covered by the policy. Many underwriters have been presented with claims that were not covered by the policy but were paid because they were presented in this light: if the claim is not paid the insured would seek other insurers.

## Marine Insurance Notes

Charles A. Hulme, formerly manager of the marine department of the George H. Tyson general agency at San Francisco, has accepted the position of marine secretary for the Home of New York. George L. West, who has been assistant manager under Mr. Hulme, will succeed him.

At the second meeting of the marine insurance study class, A. B. Knowles, manager of La Fonciere, prepared the material for discussion. The subjects of "Men-of-War, Enemies, Pirates, Rovers, Thieves, Letters of Marque and Counter Marque, Takings at Sea, Arrests, Restraints and Detainments of Kings, Princes and People," were the objects of this discussion.

The third meeting was held November 9 and the subject discussed was "Jettison and Baratry." James Quimby, of George E. Billings Company, collected the information for the discussion on these subjects.

The Franklin Fire Insurance Company has established a Pacific marine department, which will be conducted as a branch of the head office, at 104 Insurance Exchange Building, San Francisco. The new office will be under the management of C. W. Jones. Mr. Jones was formerly with George E. Billings Company, and has, besides numerous friends in the maritime circles, considerable experience in marine underwriting.

Thomas P. Kehoe has been appointed manager of the marine department of Willcox, Peck & Hughes, San Francisco, to succeed G. W. Cortelyou.

J. E. S.

## Japanese Business

Marine insurance contracts for July for all companies in Japan amounted to yen 850,331,000, almost the same as for the corresponding period of last year, says the Japan Advertiser. The amount of contracts since January is yen 5,601,949,000, an increase of yen 188,980,000 over the corresponding period of last year. The insurance business is unusually brisk, but due to severe competition among all companies premiums have experienced a 10 per cent fall from last year and companies have decided to introduce a rebate in the premiums for ships which are not tied up more than 30 days—something which has not been done in the past. More lenient measures have been adopted in contract requirements. Regulations also forbid marine insurance firms from collecting insurance money from shipowners who are embarrassed by the shipping depression.

### A QUARTER-CENTURY OF OREGON MARINE BUSINESS

| YEAR | Risks Written | Gross Premiums | Premiums Returned | Losses and Claims Paid | Net Premiums for Taxation |
|---|---|---|---|---|---|
| 1896 | $ 3,038,282.00 | $ 9,973.92 | $ 1,473.70 | $ 8,851.23 | $ 4,322.69 |
| 1897 | 8,544,261.93 | 85,095.26 | 2,670.19 | 14,658.95 | 57,766.02 |
| 1898 | 13,163,090.00 | 158,008.34 | 2,578.39 | 27,243.02 | 128,186.93 |
| 1899 | 6,399,733.00 | 83,506.92 | 663.57 | 39,227.21 | 59,238.21 |
| 1900 | 5,653,657.00 | 67,523.69 | 1,575.06 | 13,699.26 | 52,249.37 |
| 1901 | 6,496,058.00 | 69,997.83 | 2,540.74 | 30,632.03 | 36,825.06 |
| 1902 | 7,785,382.34 | 91,590.54 | 1,723.65 | 163,127.09 | 42,586.91 |
| 1903 | 10,346,425.20 | 87,603.97 | 5,177.58 | 42,068.52 | 40,357.87 |
| 1904 | 11,165,020.00 | 83,581.04 | 3,382.31 | 41,734.78 | 41,350.44 |
| 1905 | 13,715,319.00 | 87,266.07 | 1,881.04 | 66,083.52 | 41,503.89 |
| 1906 | 11,409,127.00 | 91,129.41 | 877.18 | 28,818.73 | 64,049.14 |
| 1907 | 16,544,689.00 | 146,840.87 | 3,684.78 | 76,782.53 | 77,344.05 |
| 1908 | 17,493,616.00 | 170,003.88 | 3,549.76 | 39,927.19 | 127,526.93 |
| 1909 | 22,733,517.00 | 200,661.14 | 9,576.13 | 152,620.89 | 74,094.79 |
| 1910 | 20,012,662.00 | 167,230.29 | 3,365.15 | 470,374.55 | 34,568.36 |
| 1911* | 24,996,767.00 | 194,391.94 | ........ | 130,844.70 | 61,880.63 |
| 1912* | 37,421,217.00 | 159,560.70 | ........ | 48,602.85 | 106,890.02 |
| 1913* | 40,154,759.00 | 184,305.83 | ........ | 38,337.93 | 119,833.46 |
| 1914* | 37,642,304.00 | 171,595.33 | ........ | 165,101.10 | 12,983.82 |
| 1915* | 42,059,960.00 | 196,190.21 | ........ | 72,666.25 | 102,389.24 |
| 1916* | 47,952,300.00 | 224,794.57 | ........ | 252,977.78 | — 6,212.38 |
| 1917* | 65,473,365.00 | 283,445.16 | ........ | 39,680.25 | 179,149.06 |
| 1918* | 96,871,729.00 | 305,652.99 | ........ | 37,100.47 | 194,960.01 |
| 1919* | 91,738,671.00 | 174,998.96 | ........ | 75,287.65 | 112,204.18 |
| 1920* | 168,526,616.00 | 409,664.28 | ........ | 88,358.40 | 206,320.61 |
| 1921* | 212,378,592.00 | 364,700.87 | ........ | 132,418.95 | 222,697.55 |

# AMERICAN SHIPBUILDING

## A Survey of Current Activity, Including Work in Prospect, Recent Contracts, Yard Notes, Progress of Construction and Repairs of the Month

### Current Building

On October 1, American shipyards were building or under contract to build for private shipowners 198 steel vessels of 255,431 gross tons compared with 131 steel vessels of 249,999 gross tons on September 1, 1922, says a summary of the bureau of navigation, Department of Commerce.

### Recent Contracts

**Todd Drydock & Construction Corporation**, Tacoma, Washington, a $1,000,000 freight and passenger vessel for the Alaska Steamship Company. The new steamer will be a twin-screw craft, 365 feet long, 49 feet beam and 26 feet depth, and capable of maintaining a speed of 16 knots an hour. Although the vessel is being built primarily for the Alaska-Puget Sound run she is so constructed as to be easily adapted to other routes, and will be so arranged that she may be converted to diesel-electric drive. Work will start immediately and the ship probably will be ready for operation by next summer. The steamer will have accommodations for about 235 first cabin passengers and will be the largest vessel in service to Alaska.

**The St. Helens Shipbuilding Company**, Portland, Oregon, two piledrivers for Army Engineers for use in conjunction with dike work on lower Columbia River, $12,383.20 each.

**American Bridge Company**, Pittsburgh, forty coal barges, Carnegie Steel Company, 175 long by 26 by 11.

**Great Lakes Engineering Works**, River Rouge, Michigan, automobile and passenger ferry, Walkerville & Detroit Ferry Company, 128 long by 45 (53 over guards) by 12 loaded draft, compound engine, 800 IHP.

**Howard Shipyards & Dock Company**, Jeffersonville, Indiana, Mississippi River packet, Eagle Packet Company, St. Louis, 210 long by 38 by 6-6; engines and boilers to be installed by owners.

**Charles Ward Engineering works**, Charleston, West Virginia, lighthouse tender, U. S. Lighthouse Service; 164-6 long by 32-6 by 5; two non-condensing HP engines. Two steel barges, U. S. Engineers, Florence, Alabama, 120 by 36 by 7-6. Sternwheel tugboat, Kelly Axe Manufacturing Company, Charleston, 90 by 20 by 4, one Fairbanks-Morse C-O engine, 200 HP. Steel derrick boat, same owners, 42 long by 30 by 5, fitted with Brown locomotive crane. Steel covered barge, steel open barge, same owners, each 126 long by 24 by 7.

### Keel-layings

Light vessel 110, U. S. Lighthouse Service, Bath Iron Works, October 25.

Car float, Brooklyn Eastern District Terminal, New York Shipbuilding Corporation, October 19.

Two passenger vessels, Wilmington Steamship Company (Wilson Line), and one floating grain elevator, Pennsylvania Railroad, The Pusey & Jones Company, all October 25.

Three steel tugboats, New York Central Railroad, Tebo Yacht Basin Company, all August 31.

### Launchings

Yosemite, ferryboat, James Rolph & Company, Bethlehem Shipbuilding Corporation, Union Plant, October 19.

Light vessel 106, U. S. Lighthouse Service, Bath Iron Works, October 21.

Priscilla Dean, wood yacht, K. M. Devos, DeFoe Boat & Motor Works, October 25.

Frank A. Augsbury, Lake freighter, George Hall Coal Company of Canada, Fraser, Brace, Ltd., October 21.

Barge, Rockland & Rockport Lime Corporation, New York Shipbuilding Corporation, October 5.

Goodwill, yacht, Keith Spalding, Bethlehem Shipbuilding Corporation, Harlan Plant, October 21.

Raleigh, scout cruiser, United States Navy, Bethlehem Shipbuilding Corporation, Fore River Plant, October 25.

Floating grain elevator, Pennsylvania Railroad, The Pusey & Jones Company, November 8.

### Deliveries

N. H. Botsford, Lake freighter, George Hall Coal Company of Canada, Fraser, Brace, Ltd., September.

S-48, submarine, U.S.N., Lake Torpedo Boat Company, October 14.

Two barges, Rockland & Rockport Lime Corporation, New York Shipbuilding Corporation, October 13, 25.

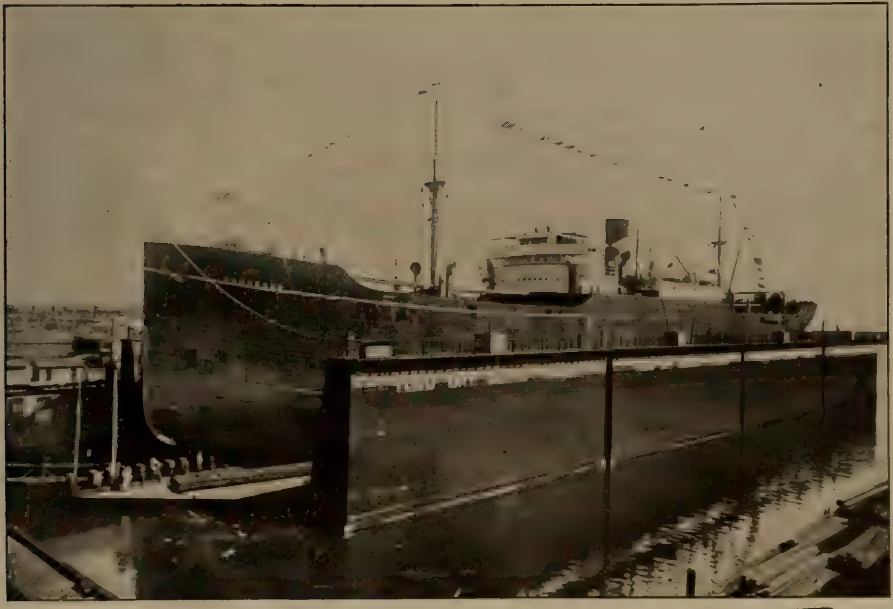
Bulk freighter, Mathews Steamship Company, Port Arthur Shipbuilding Company, October 7.

Car float, Lehigh Valley Railroad, Bethlehem Shipbuilding Corporation, Baltimore Drydock Plant, October 11.

Steelore, ore and oil carrier, Ore Steamship Company, Bethlehem Shipbuilding Corporation, Sparrows Point Plant, October 30.

### Work in Prospect

Authorization has been given for the construction of two dump or hopper barges for use on the middle and upper Columbia River in connection with dredging operations. Specifications are being prepared at the office of the Second Portland District, Corps of Engineers, U. S. A., in charge of Major Mayo, and a call for bids will be issued shortly.



The raising of the steamship Duquesne on the new 10,000-ton drydock was the main feature of the celebration that marked the opening of the Mobile plant of the Todd Shipyards Corporation. This dock was towed to Mobile from Erie Basin, a distance of 1700 miles. Photo by Todd Shipyards Corporation.

The Port of Portland, Oregon, plans an expenditure of $75,000 for a motor pilot boat to be utilized at the entrance to the Columbia River. Through the operation of this boat it is calculated that steam tug service at the mouth of the river can be largely dispensed with. The pilot boat will be 120 feet long and have a beam of 26 feet, being fitted with a diesel engine of not less than 200 horsepower that may develop considerably more. There will also be comfortable living quarters for crew and pilots. When the plans are ready proposals will be asked of builders located within the Port of Portland taxation district.

* * *

The United States Army, corps of engineers, has authorized plans and specifications for the construction of eight steel fuel barges to replace a like number of wooden barges in dredging work at the mouth of the Columbia River. Funds for the new barges will be provided by Congress in March. The barges will be 120 feet long, 34 feet beam and 7.6 feet deep.

* * *

The Victoria-Anacortes Ferry Company has requested bids for the construction of a new automobile and passenger ferry boat to be placed in service about April 1 of next year between Anacortes, Washington, and Sidney, B. C. Plans and specifications call for a boat 146 feet long, 34 feet beam and 9 feet in depth, equipped with a 500-horsepower diesel engine.

* * *

The Algiers Drydock & Ship Repair Company of New Orleans is to construct a floating all-steel drydock to accommodate vessels up to 10,000 deadweight tons, at an approximate cost of $400,000. The drydock as planned will be 250 feet by 54 feet and will be equipped with hydraulic trunks 26 feet high and will be operated by electric-driven centrifugal pumps.

* * *

The salvage steamer Algerine of the London Salvage Association has gone south in an attempt to salvage the Mexican liner Guerrero, which was beached on the coast three miles north of Mazatlan in a recent storm. The vacancy in the Mexican States Line caused by the disability of the Guerrero has been filled by the steamer Chihuahua.

* * *

An unusual marine accident occurred in Yokohama the early part of October with the launching of the 197-ton refrigerator vessel Sankei Maru, built by the Yokohama Dockyard. The ship, shortly after reaching water, lurched to starboard and sank within ten minutes. Forty men working on the ship jumped overboard and were rescued without serious mishap. The cause of the accident is not known. The vessel will be raised and reconstructed. She was built by order of the Bonin Island government and was to be used for the transportation of fish between the Bonin Islands and Tokyo. The governor of Tokyo and officials of the dockyard company were present at the christening.

* * *

A new marine way will be completed before the end of the year at the new plant of the King & Winge Shipbuilding Company at East Waterway, Seattle. The King & Winge Shipbuilding Company recently moved its yard from West Seattle to East Waterway and plan to develop one of the most efficient ship repair yards on the Pacific Coast.

* * *

The last of the auction sales conducted by the United States Shipping Board, through the Emergency Fleet Corporation, of surplus material, will be held at Sparrows' Point, Maryland, November 22, 1922. The auction will be conducted by the M. Fox & Sons Company, Baltimore, Maryland. The material which will be offered at this auction was purchased for use in the construction of three 13,000-ton cargo and passenger vessels that were under contract with the Bethlehem Shipbuilding Corporation and were subsequently cancelled. A large quantity of valves of standard manufacture, varying in size from 1 inch to 20 inches, are to be included in this sale. It is estimated that there are 50 tons of brass valves and 150 tons of iron valves; many of the iron valves are brass fitted. There are four Yarrow tube boilers of the Express type, each having a heating surface of approximately 4900 square feet and built for a pressure of 465 pounds per square inch. They are equipped for burning oil, and while they are specially designed for marine service they could be used for stationary installation.

Many items of miscellaneous equipment and supplies will also be offered at this auction, including joiner work, refrigerator doors, plumbing supplies and thermo tanks built for use in connection with indirect heating system. Three automobiles will also be included.

* * *

The Oregon Boiler Works of Seattle have been awarded a contract for the repair of the steamer Ketchikan of the Alaska Steamship Company, which was recently beached after she struck an iceberg in Icy Strait, Southeastern Alaska. The work will be done at the Heffernan drydock in West Seattle and will cost about $40,000. The hull of the ship was badly damaged and fifty plates will have to be removed from the vessel's bottom. Fifteen plates will be replaced after they have been faired, while thirty-five will have to be entirely renewed.

* * *

The Moore Shipbuilding Company was the successful bidder on two pieces of repair work to be done on the steamer President Wilson when she returns from her next trip to the Orient. One was for the installation of steerage accommodations on C deck in No. 8 compartment, on which the Moore company bid $9935 and the installation of steerage accommodations for 240 steerage travelers in Nos. 7 and 8 compartments, bidding $19,835, while the other was for the installation of steam and exhaust lines to the winches and changes in the fire chain. The Bethlehem Shipbuilding Company was the next lowest bidder with a quotation of $21,260 on the installation of accommodations for 240 steerage passengers in compartments Nos. 7 and 8, and $3401 on the steam and exhaust lines to winches.

* * *

The sea-going tug Tussler was launched October 19 at the Chilman shipyards, Hoquiam. The ship was towed to the Grays Harbor Motorship yards in Aberdeen and will be fitted with 200 horsepower C. O. diesel engines. The tug was constructed for the R. J. Ultican Tug Company.

* * *

The new vessel Jeannette Scott, designed by Cox & Stevens and building under their supervision for the Adams Boat Line, Inc., is approaching completion at the yard of the Murnan Shipbuilding Corporation, Mobile, Alabama. This vessel is 120 feet overall, has a beam of 25 feet 6 inches, is equipped with two oil engines delivering 240 b. h. p.; is for combined passenger and freight service, and will draw 4 feet 10 inches loaded. The Adams Boat Line does business between Tampa, St. Petersburg, Manitee River and Sarasota Bay towns.

* * *

The tanker Lyman Stewart of the Union Oil Company which was wrecked and has been lying on the rocks at Lands End, San Francisco, since the early part of October, has been sold by Lloyd's underwriters to Captain T. P. H. Whitelaw, salvage expert, who will dismantle the vessel. In making the sale it was stipulated that the tanker was not to be salvaged but was to be dismantled.

* * *

The bankrupt Prince Rupert Drydock & Engineering Company may be able to pay 50 cents on the dollar. Another Canadian corporation, the Victoria (B. C.) Shipowners, Ltd., which was constructing four barkentines at the Cholberg yard with the assistance of the Dominion government, has been declared bankrupt.

* * *

The Kure naval arsenal, Japan, has launched a 20-ton electric-welded vessel. A 17-ton electric-welded buoy has been built at Osaka for the Yokkaichi harbor office and an oil tank is being built for the Japanese Navy.

* * *

The auxiliary schooner yacht Goodwill, which is being built for Keith Spalding of Chicago by the Bethlehem Shipbuilding Corporation, was launched Saturday, October 21, at the Harlan Plant, Wilmington, Delaware. The yacht, which was designed by Henry J. Gielow, naval architect of New York, is a two-masted schooner measuring 161 feet overall with a beam of 30 feet, a depth of hold of 21 feet, and a draft of 15 feet 3 inches. The auxiliary propelling machinery will consist of a six-cylinder Nelseco engine of the diesel type burning heavy oil. It is expected the yacht will be completed and turned over to her owner by the first of the year.

* * *

The Bethlehem Shipbuilding Corporation has bought the Simpson drydocks at Boston and will operate them under the title of Simpson Plant, Bethlehem Shipbuilding Corporation.

# Progress of Construction

## Atlantic, Lakes, Rivers

### AMERICAN BRIDGE COMPANY, PITTSBURGH, PENN.

Purchasing Agent: W. G. A. Millar.

Two carfloats, Long Island R R Co, 292x42x11-6; under construction at Federal Shipbuilding Co, Kearny, N. J.; launch Nov/22, est.

Ten sand barges, undisclosed interests; 135x27x10; launchings Nov-Dec/22, est.

Two sand barges, Wilson Sand & Supply Co, Huntington, W Va, 135 x27x10; launch Jan/23, est.

Three decked barges, Patton-Tully Transportation Co, Memphis, 160x34 x7; launch Dec/22, est.

Twenty coal barges, American Steel & Wire Co., Pittsburgh; 175 x 26 x 11; launch 1923, est.

Two fuel flats, undisclosed interests; 90 x 18 x 4-6; launch Feb/23, est.

Forty coal barges, Carnegie Steel Co.; 175 long by 26 x 11; launch 1923, est.

### THE AMERICAN SHIP BUILDING CO., LORAIN, OHIO

Purchasing Agent: W. H. Gerhauser.

No name, hull 781, bulk freighter H. K. Oakes Company; 596 LBP; 64 beam; 21 loaded draft; 12 mi loaded speed; 13,000 DWT; TE engs, 2400 IHP; 3 Scotch boilers, 14x11, 185 WP.

No name, hull 782, bulk freighter Pittsburgh Steamship Co; 580 LBP; 60 beam; 21 loaded draft; 12 mi loaded speed; 12,500 DWT; TE engs, 2300 IHP; 3 Scotch boilers, 13-6x11, 185 WP.

No name, hull 783, bulk freighter Pittsburgh Steamship Co; sister to above; keel Dec/22, est; launch Mar /23, est; deliver May/23, est.

No name, hull 784, bulk freighter G A Tomlinson Co; sister to above; keel Dec/22, est; launch Mar/23, est; deliver May/23, est.

### BATH IRON WORKS, LTD., BATH, MAINE

Purchasing Agent: John L. P. Burke.

Light vessel 106, hull 87, second-class light vessel US Dept of Commerce, 109-6 LBP, 30 beam, 14-4 loaded draft, 9½ speed; comp eng, 400 IHP; 2 Scotch boilers, 10-6 x 11-5; keel Apr12/22; **launch Oct21/22**; deliver Dec/22, est.

Light vessel 107, hull 88, sister to above; keel Apr14/22; launch Nov/ 22,est; deliver Jan/23, est.

Light vessel 108, hull 89, sister to above; keel May24/22; launch Jan/ 23, est; deliver Mar/23, est.

Light vessel 109, hull 90; sister to above; keel May31/22; launch Mar/ 23, est; deliver Apr/23, est.

Light vessel 110, hull 91, sister to above; **keel Oct25/22**; launch May/ 23, est; deliver June/23, est.

### BETHLEHEM SHIPBUILD'G CORPORATION, BALTIMORE DRYDOCK PLANT, BALTIMORE

Fort McHenry, hull 125, tanker builder's account; 340 LBP; 49 beam; 23-6 loaded draft; 10½ loaded speed; 6050 DWT; rec eng, 2000 I HP; 2 Scotch boilers, 15-6; keel Nov24/20; launch Feb1/22.

Hull 131, carfloat Lehigh Valley R. R.; 180 LBP; 36 beam; 9 loaded draft; keel June 3/22; launch Sept 18/22; **deliver Oct11/22.**

### BETHLEHEM SHIPBUILDING CORP., FORE RIVER PLANT, QUINCY, MASS.

Lexington, hull 1300, airplane-carrier U S N.

Raleigh, hull 1382, scout cruiser U S N; **launch Oct25/22.**

Detroit, hull 1383, scout cruiser U S N; launch June29/22.

Massachusetts, hull 1400, battleship U S N; to be scrapped.

S-27, hull 1318, submarine U. S. N.
S-29, hull 1320, submarine U. S. N.
S-42, hull 1389, submarine U. S. N.
S-43, hull 1390, submarine U. S. N.
S-44, hull 1391, submarine U. S. N.
S-45, hull 1392, submarine U. S. N.
S-46, hull 1393, submarine U. S. N.
S-47, hull 1394, submarine U. S. N.

### BETHLEHEM SHIPBUILDING CORP., HARLAN PLANT, WILMINGTON, DEL.

Goodwill, hull 3478, yacht Keith Spalding; 150 LBP; 30 beam; 15-3 deep; 360 DWT; two 6 cyl 180 HP Nelseco diesel engs; **launch Oct 21/22.**

Hull 3479, carfloat Bush Terminal; keel Sept18/22.
Hull 3480, sister to above.
Hull 3481, sister to above.
Hull 3482, carfloat B. & O. R. R.

### BETHLEHEM SHIPBLDG. CORP., SPARROWS POINT PLANT, SPARROWS POINT, MD.

Steelore, hull 4213, ore and oil Ore SS Co; 550 LBP; 72 beam; 32-4 loaded draft; 11½ loaded speed; 20,000 DWT; turb eng, 4600 IHP; 3 Scotch boilers, 17-6x12; keel July 20/21; launch Aug15/22; **deliver Oct30/22.**

No name, hull 4214, freighter Eastern Steamship Company; 233-6 LBP; 40 beam; 15-6 loaded draft; 11 loaded speed; 1340 DWT; rec engs, 1300 IHP; 2 Scotch boilers, 13-9x11; keel Aug29/22.

No name, hull 4215, sister to above; keel Aug29/22.

### COLLINGWOOD SHIPBUILDING CO., LTD., COLLINGWOOD, ONTARIO

Hull 72, canal-sized freighter; 252 LBP; 43 beam; 14 loaded draft; 9½ loaded speed; 2500 DWT; TE surface-condensing eng, 750 IHP; 1 Scotch boiler, 14x10-9 HFD; keel Nov15/22, est.

### CONSOLIDATED SHIPBUILDING CORPORATION, MORRIS HEIGHTS, N. Y.

Purchasing Agent: Bruce Scrimgeour.

Zalophus, steel motor houseboat for John Ringling; 125 LOA; 21 beam; 4 draft; 12 speed; two 6-cyl

180 HP Nelseco diesel engs; keel Mar22/22; launch June24/22; deliv Nov15/22, est.

Steel motor cruiser for Charles Ringling; 120 LOA; 20 beam; 4 draft; 2 Speedway 6-cyl engs, 165 HP each; keel June30/22.

### WILLIAM CRAMP & SONS SHIP & ENGINE BUILDING CO., PHILADELPHIA

Purchasing Agent: Ed. C. Geehr.

Richmond, hull 448, scout cruiser U. S. N.; keel Feb16/20; launch Sept 29/21; 94.3 per cent comp Oct1/22.

Concord, hull 449, scout cruiser USN; keel Mar29/20; launch Dec 15/21; 89.8 per cent comp Oct1/22.

Trenton, hull 501, scout cruiser USN; keel Aug18/20; 57.7 per cent comp Oct1/22.

Marblehead, hull 502, scout cruiser USN; keel Aug4/20; 48.2 per cent comp Oct1/22.

Memphis, hull 503, scout cruiser USN; keel Oct14/20; 43.1 per cent comp Oct1/22.

General reconditioning, due to fire damage, of tanker Alameda, 10,000 DWT.

### DEFOE BOAT & MOTOR WORKS, BAY CITY, MICH.

Windsor II, hull 60, yacht G. W.. Megeath; 98 LBP; 15 beam; 6 draft; 14 speed; Standard gas eng; keel June28/22; launch Nov15/22, est.

No name, hull 61, yacht builder's account; sister to above; keel June 28/22; launch Nov30/22, est.

Priscilla Dean, hull 63, wood yacht K. M. Devos; 65 LBP; 12½ beam; 4 draft; 22 speed; gas eng; keel Mar 10/22; launch Oct25/22; deliver Nov5/22, est.

### FEDERAL SHIPBUILDING CO., KEARNY, N. J.

Purchasing Agent: J. L. Hastings.

Steel Traveler, hull 68, freighter U. S, Steel Products Co.; 425 LBP; 56 beam; 27 loaded draft; 11½ loaded speed; 10,025 DWT; Parsons turbines, 3100 SHP; 3 Scotch boilers, 15-3x11-3¾; keel Mar16/22; launch Oct7/22.

No name, hull 71, steel drill boat War Department, sub-contract from Dravo Contracting Company; 157 LBP; 52 beam; 12-9 deep; keel May 22/22.

Berkshire, hull 72, coastwise psgr and frt Merchants & Miners Transportation Co; 350 LBP; 52 beam; 19 loaded draft; 12 loaded speed; TE engs, 2700 IHP; 4 SE Scotch boilers, 14-3x11; keel July 5/22; launch Nov15/22, est; deliver Jan15/23, est.

Allegheny, hull 73, coastwise psgr and frt Merchants & Miners Transportation Co; sister to above; keel July24/22; launch Dec15/22, est; deliver Feb15/23, est.

Hull 74, steel car float, Long Island Railroad, 292 long; 43-8 beam; 11-6 deep; keel July26/22; deliver Nov1/22, est.

Hull 75, steel car float, Long Island Railroad; sister to above; keel Aug5/22; deliver Nov21/22, est.

### FRASER, BRACE, LIMITED, THREE RIVERS, QUEBEC

N. H. Botsford, hull 18, Lake freighter George Hall Coal Co. of Canada; 250 LBP; 43 beam; 16-6 loaded draft; 12 loaded speed; 3270 short tons DWT; TE eng, 1400 IHP, 19x32x56-36 stroke; 2 Scotch marine boilers, 14-7x10-8, coal burning; keel Feb/22; launch Aug19/22; **deliver** Sept/22.

Frank A. Augsbury, hull 19, Lake freighter George Hall Coal Co. of Canada; sister to above; **launch Oct** 21/22; deliver Oct30/22, est.

No name, hull 17, sister to above; keel Mar/22.

No name, hull 20, sister to above; keel Apr/22.

### GREAT LAKES ENGINEERING WORKS, RIVER ROUGE, MICHIGAN

Purchasing Agent: H. O. Kretlow.

James MacNaughton, hull 242, bulk frt Wilson Tran Co, Cleveland; 580 LBP; 60 beam; 20 loaded draft; 11½ miles loaded speed; 11,800 gross, TE engs, 1880 IHP; 3 Scotch boilers, 13-6; keel May3/22; launch Sept23/22; deliver Oct1/22, est.

No name, hull 243, automobile and passenger ferry, Walkerville & Detroit Ferry Co.; 128 LBP; beam, hull, 45, guards, 53; 12 loaded draft; 11 loaded speed; F&A comp eng, 20x40-28; 800 IHP; 2 Scotch boilers, 11-6x10-6; deliver Apr/23, est.

### HOWARD SHIPYARDS & DOCK CO., JEFFERSONVILLE, IND.

Purchasing Agent: Jas. E. Howard.

No name, hull 1560, Mississippi River packet, Eagle Packet Co., St. Louis; 210 LBP; 38 beam; 6-6 deep; engines and boilers to be installed by owners.

### JOHNSON IRON WORKS, D. D. & S. B. CO., NEW ORLEANS

Hull 163, steel oil barge, US Engrs, Mobile; 87 LBP; 28-4 beam; 7 loaded draft.

Hull 164, sister to above.
Hull 165, sister to above.
Hull 166, sister to above.
Hull 167, sister to above.
Hull 168, sister to above.

Hull 169, steel oil barge, Sou Paper Mills; 144 LBP; 32 beam; 8-6 loaded draft.

Hull 170, steel barge, Jno A Hunt Co; 48 LBP; 12 beam; 3-6 loaded draft.

Hull 171, sister to above.

Hull 172, quarter boat, US Engrs, Nashville; 60 LBP; 22 beam; 4 loaded draft.

Hull 173, sister to above.

Hull 174, fireboat, City of New Orleans; 138 LBP; 29 beam; 15-6 loaded draft; comp eng, 2 WT boilers.

Upatoi, hull 175, dredge, US Engrs, Montgomery; 100 LBP; 34 beam; 6-8 loaded draft.

### KYLE & PURDY, INC., CITY ISLAND, NEW YORK CITY

Purchasing Agent: T. A. Kyle.

Bird S. Coler, hull 154, steel ferryboat dept of plants and structures, City of New York; 90 LBP; 30 beam; 6-8 loaded draft; 10 miles loaded speed; 100 DWT· comb eng, 200 I HP; Roberts tube boilers; keel June 10/23, est.

### LAKE TORPEDO BOAT CO., BRIDGEPORT, CONN.

Purchasing Agent: C. D. Maxfield.

S-48, hull 48, submarine U S N; launch Feb26/21; **delivered and commissioned Oct14/22.**

### NAVY YARD, BOSTON

Whitney, destroyer tender No. 4 USN; 460 LBP; 60-10⅛ molded beam; 21-0½ normal draft; 16 loaded speed; 10,600 normal disp; geared Parsons turbs, 7000 SHP; 2 WT exp boilers; keel Apr 23/21; launching indefinite.

### NAVY YARD, PHILADELPHIA

Dobbin, hull 7, destroyer tender USN; 460 LBP; 60-10 beam; 21 loaded draft; 16 loaded speed; 10,600 tons disp; Parsons geared turb single screw engs, 7000 SHP; 2 WT boilers; keel Dec23/19; launch May 5/21; deliver date not determined.

Constitution, hull 8, battle cruiser USN; 850 LBP; 105-4 beam; 30-11½ loaded draft; 33½ loaded speed; 43,500 disp; electric drive, 180,000SHP; 16 WT boilers; keel Sept25/20; to be scrapped.

United States, hull 9, battle cruiser USN; 850 LBP; 105-4 beam; 30-11½ loaded draft; 33½ loaded speed; 43,500 disp; electric drive, 180,000 SHP; 16 WT boilers; keel Sept25/20; to be scrapped.

### NEWPORT NEWS SHIPBUILDING & DRYDOCK COMPANY, NEWPORT NEWS

Purchasing Agent: James Plummer, 233 Broadway, New York City.

West Virginia, hull 211, battleship USN; 600 LBP; 97-3½ beam; 30-6 mean draft; 32,600 normal disp; 21 speed; GE turbo-elec drive, 28,900 SHP; 8 B&W WT boilers, oil, 41,768 sq ft plus 4168 superheat; keel Apr 12/20; launch Nov19/21.

Constellation, hull 215, battle-cruiser USN; 850 LBP; 101-8¼ beam; 31 mean draft; 43,500 normal disp; 33¼ speed, est; Westinghouse turbo-elec drive, 180,000 SHP; 16 WT boilers, oil, 198,000 sq ft plus 18,000 superheat; keel Aug 18/20; construction suspended.

Ranger, hull 215, battle-cruiser U SN; sister to above; keel June23/21; construction suspended.

Iowa, hull 258, battleship USN; 660 LBP; 105 beam; 33 mean draft; 43,200 normal disp; 23 speed; GE turbo-elec drive, 60,000 SHP; 12 White-Forster WT boilers, oil, 82,800 sq ft plus 8940 superheat; keel May17/20; construction suspended.

Ohio, hull 265, diesel yacht Cox & Stevens; 172 LOA; 26 beam; 15-6 deep; keel Aug1/22; launch Sept16/22; deliver Nov/22, est.

No name, hull 266, combination str, Ocean Steamship Company of Savannah; 382 LBP; 52 beam; 18-6 loaded draft; 12½ loaded speed; 3500 DWT; TE engs, 2900 IHP; 4 Scotch boilers, 14-9x11-6.

No name, hull 267, sister to above.

## NEW YORK SHIPBUILDING CORPORATION, CAMDEN, N. J.

Purchasing Agent: L. G. Buckwalter.

Eurana, hull 264, bulk oil stock; 419-3 LBP; 56-3 beam; 25-9¼ loaded draft; 10¾ loaded speed; 9870 DWT; 3 cyl TE engs, 3000 SHP; 3 SE Scotch boilers, 15-10x11-4; keel Jan17/21; launch July16/21.

No name, hull 265, bulk oil stock; sister to above.

Saratoga, hull 199, battle cruiser USN; 874 LOA; 850 LBP; 105-5¼ extreme beam; 31 mean draft; 43,500 normal disp; 33¼ loaded speed; GE turbo-electric drive; 180,000 SHP; 16 WT boilers, 198,000 sq ft plus 18,000 superheat; keel Sept25/20.

Colorado, hull 200, battleship USN; 624 LOA; 600 LBP; 97-3½ beam waterline; 30-6 mean draft; 32,600 normal disp; 21 loaded speed; Westinghouse turbo-electric drive, 28,900 SHP; 8 B&W WT boilers, 41,678 sq ft plus 4169 superheat; keel Mar29/19; launch Mar22/21.

Washington, hull 201, battleship USN, sister to above; keel June30/19; launch Sept1/21; to be scrapped.

Hull 270, barge Rockland & Rockport Lime Corporation; length 196-10; keel June14/22; launch Sept7/22; **deliver Oct13/22.**

Hull 271, sister to above; keel June19/22; **launch Oct5/22; deliver Oct25/22.**

Hull 274, sister to above; keel Sept11/22.

Hull 273, sister to above; keel Aug8/22.

Hull 274, sister to above; keel Sept11/22.

Hull 275, car float Brooklyn Eastern District Terminal; 340 feet long; **keel Oct19/22.**

Hull 276, carfloat Brooklyn Eastern District Terminal; 340 feet long; keel not laid.

Hull 277, sister to above, keel not laid.

## PORT ARTHUR SHIPBUILDING CO., PORT ARTHUR, ONT.

Purchasing Agent: W. E. Decker.

Hull 47, single-deck bulk freighter Mathews Steamship Co; 530 LBP; 58 beam; 12 loaded speed; 10,000 DWT; 3-cyl TE engs, 25½-41-67x42, 2100 IHP; 3 Scotch boilers, 13-6; keel May10/22; launch Aug12/22; **deliver Oct7/22.**

## THE PUSEY & JONES COMPANY, WILMINGTON, DELAWARE

Vice-president and general manager: W. G. Coxe.

State of Maryland, hull 1021, comb str, bay or sound type, Seaboard Bay Line Co; 320 LBP; 42-6 beam on 10′ WL, 58 over guards; 14-6 mean draft; 18 miles speed; about 800 DWT; 4-cyl TE engs, 3000 IHP; 4 Scotch boilers, 13-3x11-6; keel Mar 7/22; launch July25/22; deliver Oct 15/22, est.

State of Virginia, hull 1020, comb str, bay or sound type, Seaboard Bay Line Co; sister to above; keel Mar 1/22; launch Sept6/22; deliver Nov 18/22, est.

No name, hull 1024, steel screw day passenger steamer Wilmington Steamboat Co. (Wilson Line); 219 LBP over guards; 59 beam at deck; 13-9 molded depth; 18 miles speed; 4-cyl TE engs, 2 B&W WT boilers; **keel Oct25/22.**

No name, hull 1025, steel screw day passenger steamer Wilmington Steamboat Co. (Wilson Line); sister to above; **keel Oct25/22.**

Floating grain elevator with steel deckhouse and steel frame tower Pennsylvania RR, Philadelphia; 100 LOA; 30 molded beam; 13 deep; operating machinery and 1 Scotch boiler 10 x 12-7½, 125 WP; **keel Oct 25/22; launch Nov8/22.**

## STATEN ISLAND SHIPBUILDING COMPANY, STATEN ISLAND, NEW YORK

Purchasing Agent: R. C. Miller.

Youngstown, hull 740, ferryboat Erie R R Co; 206 LBP; 44-1 beam; 17-4 loaded draft; 1538 gross tons; rec engs, 1200 IHP; 2 Scotch boilers, 12-9x12-9; keel May12/22.

No name, hull 741, ferryboat City of New York; 215 LBP; 45 beam; 18 loaded draft; elec drive, 1900 IHP; 4 B&W WT boilers, 8000 sq ft HS; keel Aug19/22.

No name, hull 742, ferryboat City of New York; sister to above; keel Aug19/22.

No name, hull 743, ferryboat City of New York; sister to above.

Hull 744, Hudson River vehicular tunnel, erection, launching and delivery of river shaft, New York side; keel Aug26/22.

Hull 745, Hudson River vehicular tunnel, erection, launching and delivery of river shaft No. 1, New Jersey side.

Hull 746, Hudson River vehicular tunnel, erection, launching and delivery of river shaft No. 2, New Jersey side.

No name, hull 747, freighter Catskill Evening Line; 180 LBP; 30 beam; 11-4 draft; 1076 gross.

## SUN SHIPBUILDING COMPANY, CHESTER, PENN.

Purchasing Agent: H. W. Scott.

Haleakala, passenger vessel Inter-Is. Steam Nav. Co., Honolulu; 345 long; 46 beam; 32 deep; 16½ speed; 4-cyl TE engs, 5000 IHP; 4 B&W WT boilers; to carry 434 passengers; keel May 16/22; launch Sept 18/22; deliver Nov30/22, est.

No name, hull 54, grain barge Pennsylvania R R; 150 LBP; 30 beam; 14 loaded draft; keel Oct 2/22.

No name, hull 55, sister to above; keel Oct9/22.

No name, hull 56, sister to above; keel Oct16/22, est.

No name, hull 57, passenger and supply str Commercial Pacific Cable Co; 169-6 LBP; 30 beam; 14 loaded draft; 9½ loaded speed; 450 DWT; rec eng, 850 IHP; 2 Scotch boilers, 12x11; keel Nov1/22, est.

No name, hull 58, hopper dredge US Engrs; 245 LBP; 46 beam; 19-6 loaded draft; 10½ loaded speed; 2000 DWT; diesel-electric drive; keel Dec2/22, est.

No name, hull 59, sister to above; keel Dec9/22, est.

No name, hull 60, sister to above; keel Dec16/22, est.

No name, hull 61, sister to above; keel Dec23/22, est.

Munmotor, Munson S S Co, 3000 DWT; conversion from reciprocating to diesel engines.

## TEBO YACHT BASIN COMPANY, BROOKLYN, N. Y.

Purchasing Agent: R. C. Smith.

No name, hull 22, steel tugboat New York Central R. R.; 108 LBP; 25-6 beam; 12-9 loaded draft; about 219 gross tons; vert comp eng, 20x40-26, 650 IHP; 1 Scotch boiler, 14-3x11-6; **keel Aug 31/22;** deliver Jan 15/23, est.

No name, hull 23, steel tugboat New York Central R. R.; sister to above; **keel Aug31/22;** deliver Feb 15/23, est.

No name, hull 24, steel tugboat New York Central R. R.; sister to above; **keel Aug31/22;** deliver Mar 15/23, est.

## THE TOLEDO SHIPBUILDING CO., TOLEDO, OHIO

Purchasing Agent: H. M. Ives.

No name, hull 174, cargo Kinsman Transit Co., Cleveland; 590 LBP; 60 beam; 20 loaded draft; 12 mi loaded speed; 12,000 DWT; TE eng, 2000 IHP; 3 Scotch boilers, 13-6; keel Sept5/22; launch Nov/22, est; deliver Apr15/23, est.

## THE CHARLES WARD ENGINEERING WORKS, CHARLESTON, WEST VIRGINIA

Purchasing Agent: E. T. Jones.

Gen'l Frank M. Coxe, hull 17, river str War Dept; 144 LBP; 28 beam; 9 loaded draft; 16 miles loaded speed; 175 DWT; TE eng, 1050 IHP; 2 Ward WT boilers, 2094 sq ft heating surface; keel July 16/21; launch Mar3/22; deliver Nov1/22, est.

Gen'l John McE. Hyde, hull 18, river str War Dept; sister to above; keel July18/21; launch Mar11/22; deliver Nov1/22, est.

Ste. Genevieve, hull 20, sidewheel car ferry Mo.-Ills. R. R. Co., subsidiary of St. Joseph Lead Co; 285 LBP; 54 beam; 5 loaded draft; 820 DWT; simple HP non-condensing eng, 22 in dia by 8 ft stroke, 200 lbs WP; 6 Miss River type boilers, 44 in dia, 26 ft long; keel June8/22; launch Sept21/22; deliver Dec1/22, est.

Greenbrier, hull 21, U. S. Lighthouse tender; 164-6 long by 32-6 by 5; two non-condensing HP engs, 15-inch diam cylinder, 84-inch stroke; 3 Mississippi River type boilers, 26 ft long, coal-burning, natural draft.

Hull 22, steel barge, U. S. Engineers, Florence, Ala.; 120 long by 36 by 7-6.

Hull 23, sister to above.

Hull 24, sternwheel towboat, Kelly Axe Mfg. Co., Charleston, W. Va.; 90 long by 20 by 4; one Fairbanks-Morse C-O eng, 200 HP.

Hull 25, steel derrick boat, Kelly Axe Mfg. Co., Charleston, W. Va.; 42 long by 30 by 5; barge fitted with No. 4 Brown type H, steam locomotive crane.

Hull 26, steel covered barge, Kelly Axe Mfg. Co., Charleston, W. Va.; 126 long by 24 by 7.

Hull 27, steel open barge, Kelly Axe Mfg. Co., Charleston, W. Va.; 126 long by 24 by 7.

## Pacific Coast

### BETHLEHEM SHIPBUILDING CORPORATION, LTD. UNION PLANT

#### Potrero Works

Purchasing Agent: O. W. Streett.
Submarines USN:
S-36, hull 141.
S-37, hull 142.
S-38, hull 143.
S-39, hull 144.
S-40, hull 145.
S-41, hull 146.

#### Alameda Works

Chilore, hull 5309, combination ore and coal carrier Ore Steamship Co; 571-6 LOA; 550-1 LBP; 72 molded beam; 44 molded depth; 32-4 loaded draft; 11½ loaded speed; 20,000 DWT; Curtis turbines with Falk reduction gears, 5000 SHP; 3 Scotch SE boilers, 17-6x12, each 4287 sq ft; oil burners; keel Apr17/22.

Lebore, hull 5310, combination ore and coal carrier Ore Steamship Co; sister to above.

Shasta, hull 5315, ferryboat Jas Rolph & Company; 230 LOA; 63-6 beam over guards, 42 molded; 19-6 molded depth; TE eng, 1400 IHP; propeller drive; 3 WT boilers; keel Feb20/22; launch Oct5/22.

Yosemite, hull 5316, ferryboat Jas Rolph & Company; sister to above; keel May 12/22; **launch Oct19/22.**

No name, hull 5317, tank barge Standard Oil Co (Calif); 210 LBP; 40 beam; 13-6 loaded draft; full diesel-electric drive.

### HANLON DRYDOCK & SHIPBUILDING COMPANY, OAKLAND, CALIF.

Purchasing Agent: R. Barker.

Dan F. Hanlon, hull 89, steam schr. D. J. Hanlon; 2500 DWT; 1400 IHP engines; 2 B&W boilers; work suspended.

### LOS ANGELES SHIPBUILDING & DRYDOCK CORPORATION, SAN PEDRO, CALIF.

Purchasing Agent: L. R. McFie.

Hayward, hull 37, double-ended steel ferryboat San Francisco-Oakland Terminal Railways; 225 LBP; 42 molded beam, 62-7 over guards; 11-6 loaded draft; 13 loaded speed; turbo-electric eng, 1350 IHP; 2 B& W WT boilers, 5000 sq ft total HS, 225 WP, 65 superheat, natural draft, oil-burning; keel June28/22; launching date not set.

San Leandro, hull 38, double-ended steel ferryboat San Francisco-Oakland Terminal Railways, sister to above; keel June28/22; launching date not set.

### NAVY YARD, PUGET SOUND

Medusa, repair ship for government; 460 LBP; 70 beam; about 19 loaded draft; 17-5 loaded speed; turbine eng, 7000 IHP; 2 WT express type boilers; 10,000 tons disp; keel Jan2/20; launch and deliver dates not set.

Holland, submarine tender for government; 460 LBP; 61 beam; about 20 loaded draft; 16 K loaded speed; turbine eng, 7000 IHP; two WT express type boilers; 10,000 tons disp; keel Apr11/21.

### NAVY YARD, MARE ISLAND

Montana, battleship USN; 660 LBP; 105 beam; 33 loaded draft; 23 loaded speed; 42,200 disp; turbo-electric engs, 60,000 SHP; 12 Bu's express boilers, 74,040 sq ft; keel Sept 1/20; to be scrapped.

### TODD DRYDOCK & CONSTRUCTION CORP., TACOMA

Purchasing Agent: C. L. Bankson.

Omaha, hull 100, scout cruiser USN; 555-6 LOA; 550 LBP; extreme beam 55-4; molded beam 54-9; depth molded 26; mean loaded draft 13-6; disp 7100 tons; Westinghouse Parsons turbines and reduction gear, 105,000 IHP; designated speed 34; 12 Yarrows WT boilers; keel Dec6/18; launch Dec14/20.

Milwaukee, hull 106, scout cruiser USN; sister to above; keel Dec13/18; launch Mar24/21.

Cincinnati, hull 107, scout cruiser USN; sister to above; keel May15/20; launch May23/21.

### UNION CONSTRUCTION COMPANY, OAKLAND, CALIF.

Purchasing Agent: S. G. Plummer.

No name, hull 24, bay barge, Shell Co. of Calif.; 200 LBP; 38 beam; 14 loaded draft; keel Aug22/22.

## Repair Work

### BETHLEHEM SHIPBUILDING CORP., UNION PLANT, SAN FRANCISCO

Miscellaneous repairs and painting: U. S. Transp. Meigs, Alvarado, Celilo, Gov. Markham, City of Reno, Nehalem. Propeller repairs: Wm. F. Herrin, Charlie Watson. Remetaled L. P. Slippers and repaired cargo pump: Coalinga. Two steel masts: Cowanshannock. New piston rings: Algonquin, El Segundo. Tailshaft repairs: Nanking (1 spare tailshaft and coupling), Katherine, Admiral Schley, Wm. Donovan (hull repairs). Winch repairs: Makaweli, Admiral Goodrich, H. M. Storey. Engine and boiler repairs: Lurline (hull), Olinda (crankshaft for gas engine), Caoba (also hull repairs), Liebre (also hull repairs), Lyngern, Viking (pipe work), Multnomah. Enlarge tonnage openings: Zenon. Move 2 boilers into middle of No. 2 hatch: Panaman. Hatch covers: Sinaloa. Make tracings and blueprints: President Lincoln, President Pierce, President Cleveland (also repair copper pipe). Hull repairs: San Pedro, Tamaroa, Southwestern Wharf Company's Barge. Miscellaneous repairs: Maunganui, Albertolite (jacking worm gear), La Brea (also 3 whistle levers), La Placentia (2 gib head keys), West Katan (1 shaft and hub), Mexico (also repair boiler feed pumps), Cuba, Lyman Stewart (furnish labor and material to Marine Underwriters), Walter A. Luckenbach (repaired damaged bow), Annie Johnson, Shasta (repair damage), J. A. Talbot, Matsonia, Frank G. Drum (damaged account), Nevada (repair copper pipe), D. G. Scofield (12 copper sleeves), Iowa, Pacific, W. S. Miller (1 condenser head), Ferry Steamer San Pablo, F. H. Hillman, Admiral Dewey (also 1 propeller), F. H. Hillman, Sudbury, American, Santa Paula (valves and springs for cargo pump), Rosalie Mahoney, General Frisbie, Atlas, Venetia (2 furnace fronts), Napa Valley, Florence Luckenbach, Echo, Alumna, Santa Rita (1 yoke for locking gear), Ecuador, Lansing, Katherine, Jacob Luckenbach (bronze worm for windlass), Sinaloa, Bondowoso, Ashbury Park, Providencia (also C. L. Column for windlass), Tahoe (also 1 C. I. Propeller), Hercules, Tatoosh, Wyadda, Olympic, S. O. Barge No. 95, S. C. T. Todd, K. R. Kingsbury, Yorba Linda (galley repairs), Haida, Kanji Maru, El Segundo, Shabonee, City of Los Angeles.

### BETHLEHEM SHIPBUILDING CORP., EAST SAN PEDRO, CALIF.

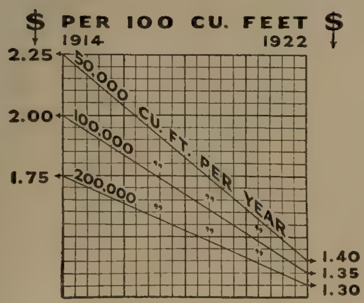
Hull repairs: Floridian, Cahokia, Miss Ship, Yerba Linda (also sundry engine and boiler repairs), Wm. Donovan (also engine repairs). Engine repairs: Wellesley, Albert Jeffries. Windlass repairs: Trinidad, Coalinga (also pinions and shaft renewals). Repairs to telegraph: J.

# A Policy and Its Results

In 1914 when the oxygen industry was in the early stages of development the LINDE COMPANY adopted as two important features of its sales policy:

*First:* A definite schedule of prices based on consumption.

*Second:* A reduction of prices as rapidly as increased volume warranted.



The accompanying chart shows typical prices applying in 1914 as compared with those applying under our new 1922 schedule. This illustrates clearly the benefits to LINDE users of the continued application of these two features to the large increase in production since 1914.

The 1922 prices shown for the respective consumptions are the average for the entire chain of 30 plants and 50 warehouses through which LINDE OXYGEN is distributed today. Slightly lower prices prevail at the plants in districts of heavy oxygen demand. Higher prices prevail where shipments are made from convenient service warehouses, or where undeveloped consumption does not permit large scale plant production and distribution.

No oxygen user, large or small, should close an arrangement for oxygen supply without first securing 1922 prices from the nearest LINDE District Sales Office.

THE LINDE AIR PRODUCTS COMPANY
Carbide and Carbon Building, 30 East 42nd Street, New York
BALFOUR BUILDING, SAN FRANCISCO

THE LARGEST PRODUCER OF OXYGEN IN THE WORLD

B. Stetson. Feed pump repairs: West Catanace. Circulating pump renewals: Calerillo. Miscellaneous repairs: J. A. Talbot, Haleo, Oleum, Cowril, A. L. Kent.

### LOS ANGELES SHIPBUILDING & DRYDOCK CORPORATION, SAN PEDRO, CALIF.

Reconditioning and converting into oil burners: Cowiche, El Cicuta. Dock for cleaning and painting: M. S. Valero, La Habra (also renewing stern tube and propeller wheel and miscellaneous boiler, engine and hull repairs), La Placentia (also miscellaneous engine and boiler repairs), Yale. Dock for inspection and hull repairs: Dredge San Pedro, Launch Cerritos. Machinery repairs: Robin Goodfellow, Paul Luckenbach, M. S. Angel, Idaho. Electrical repairs: M. S. Babinda, President Harrison (also miscellaneous piping and equipment repairs). Renew hause pipe: San Diego. Docked for changing propeller sheathing: Nome City. Minor repairs: Orinoco, Ryder Hanify, Mayarit.

### MOORE SHIPBUILDING COMPANY, OAKLAND, CALIF.

Drydocking, cleaning, painting and sundry repairs: West Jappa, Covena, William H. Smith, Aurora, Oleum, barge Erskine M. Phelps, U. S. C. G. Golden Gate, ferry stmr. Claremont, Ann Hanify, Fort Bragg, Zarah Castle, Sea Foam, Sausalito, U. S. transport Grant, San Antonio, tug Gleanor, stm. schr. Frank D. Stout, fire boat David Scannel, U. S. C. G. cutter Lydonia, City of Sydney, tug Henry J. Biddle, West Katan. Drydocking and hull repairs: Sausalito, Floridian, dredge San Pablo. Miscellaneous hull and deck repairs: C. & O. Barge No. 1, Colombia, ship Arapahoe, bark. Ed Sewall. Engine repairs: Meton, U. S. C. G. cutter Shawnee, Dutch str. Arakan, Admiral Schley, West Islip (repairs to valve chamber), C. G. Cahokia, Manoa, Matsonia, Lassen, Royal Arrow. Boiler work: Barge Baja California, barge Jennie & Edna. Drydocking and sheathing: Cal. & Haw. pile driver. Miscellaneous repairs: Edna, yacht Evian, Pres. Lincoln, Alaska.

### NAVY YARD, PUGET SOUND, WASHINGTON

Miscellaneous repairs: Idaho, Tennessee (drydocking), Seattle (preparation for commissioning). Voyage repairs: Pyro. Turbine repairs: Empress of Australia. Miscellaneous repairs incidental to operation as district craft: Sotoyomo, Mahopac, Tatnuck (also drydocking), Pawtucket. Care and preservation (out of commission): Oregon, Missoula, Charlotte.

### TEBO YACHT BASIN COMPANY, BROOKLYN, N. Y.

Drydocking and repairing: bark Macerata, yt. Winchester, yt. Oneida, Anna, tug Active, sch. John Ericson, Venus. Drydocking and painting: L. H. T. Oak, Spruce, General Edmund Kirby, Pyxie, Speedwell, Col. Albert Todd, yt. Galatea, sch. Louis E. Beauchamp. Repairs: Anaconda, Otho, West Ira, Eastern Leader, Eastern Sword, Western Glen. Removing engines: General Wilkins. Conversion from coal to oil burner: Nyanza. Drydocking and painting: yt. Nearia, sch. Victoria S., yt. Dolphin (alterations). Drydocking and repairs: yt. Inca II, tug W. B. Pollock, sch. Jennie Forrest, sch. Edna B. Hough, sch. Victor, yt. Hussar III, yt. Alcyone (alterations), yt. Orlo IV (installed wheels), yt. Alacrity (bottom repairs), tug Daisy, yt. Anona, brk. Malfetta, yt. Nourmahal, sch. Florence B. Phillips, bg. Socony 123, sch. Elinor Taylor. Repairs: Merry Mount, yt. Atherto, Sag Harbor, S. C. Hansen, Belvidere, Sinast, yt. Undaunted (alterations), independence, yt. Trillora. Installed new boiler: tug John Arbuckle.

### TODD DRY DOCKS, INC., SEATTLE

Docked for cleaning, painting, miscellaneous repairs: Pedro Christopherson, Spokane, Gas boat Petroleum II, Wheatland Montana, President McKinley, Roosevelt, Hamer. Miscellaneous repairs: Indianapolis, Washington, Sol Duc, Btkns. Forest Dream and Forest Friend, H. F. Alexander, Talthybius, Santa Clara. Repairs to vent screen: Eagle. New tail shaft: M. S. Kennecot, Jefferson. New topmast: Delrosa. Docked for survey: Ketchikan.

### THE WINSLOW MARINE RAILWAY & SHIPBUILDING CO., WINSLOW, WASH.

Drydocking, cleaning, painting: Griffdu (also repairs to towing engine and sundry repairs), barge Baroda (also installing new quarters and engine room repairs), Bainbridge (also sundry repairs to engine and rudder), tug Skookum (also new housing and overhauling engine). Miscellaneous repairs due to damage: barge Henry Villard.

## Beyfuss Freight Report

San Francisco, November 16, 1922.

Our report last month was dated the 17th; since then:

Grain to Europe has shown more activity than any other off shore trade from this coast, eight or ten steamers having been reported fixed, mostly for Northern loading, with rates somewhat higher, 36/3 up to 38/9, the latter for a small steamer, but most of the fixtures were made in the neighborhood of 37/6. Only one steamer was definitely reported for a full cargo of barley and she receives 36/10½d. The regular liners have been able to secure from the North considerable wheat at 37/6, and although an advance on this figure is being asked, at the present time no transactions are reported at higher rates. There has been no barley business of any consequence done for some weeks past in parcel shipments.

Lumber to the Orient has been again quite inactive, and although parcels are still going forward in berth steamers there are no full cargo transactions to report except one or two steamers berthed for owners' account, but rates are still quotable at about $11.

Lumber to Australia: Again we have to report two or three steamers for this destination with quite a bit of activity and consequently an advance in the rates, $13.50 now being considered the going rate and owners are asking an advance on this figure.

Lumber to West Coast of South America: Some business has been done at $16 per M. on vessels regularly engaged in this trade and one large sailing vessel is reported fixed on private terms which we judge to be considerably lower than the steamers are getting. It is reported that another foreign steamship line is to engage in this trade with regular sailings, which accounts for the softness in this market.

Nitrate: Another small steamer is fixed for nitrate to the Hawaiian Islands at the reported rate of $6 per ton.

Lumber U. S. Atlantic: A foreign steamer has been fixed from British Columbia to a North of Hatteras port at $14.15 and half a dozen American steamers have been fixed from United States Pacific to United States Atlantic ports at rates ranging about $14.50 to $15.

The intercoastal business is very brisk and no less than half a dozen American steamers have been fixed on time charter for one round trip, most of them at $1.50 per deadweight ton per month, but some at slightly under this figure.

Another steamer was taken for prompt loading for a cargo of sugar from Cuba to Vancouver at $4.25.

And the order that has been in the market for some while for a full cargo of lumber and ties from British Columbia to United Kingdom is reported taken by steamer at 80/-.

Another of our small sailing vessels has been fixed on private terms for a cargo of copra from South Sea Islands to San Francisco.

Shipment of oil from California has shown considerable activity recently and three 10,000 - ton tank steamers have been purchased by our local companies at prices ranging in the neighborhood of $50 per deadweight ton.

In addition to this, our local fleet has been increased by the purchase of a Shipping Board steamer of about 3800 tons for use in the coastwise lumber business.

C. BEYFUSS CO., Brokers.

# THE MONTH IN SHIPPING

The Williams Steamship Company of New York, operating a line of steamers in the intercoastal trade, has increased its capital stock from $3,000,000 to $4,000,000. The company is incorporated under the laws of the State of Delaware.

* * *

The steamer President Harrison, which was assigned to the Los Angeles Steamship Company for one trip to replace the steamer City of Honolulu burned at sea, will make at least one more trip in the service of this company. The steamer had been allocated to Swayne & Hoyt to be used in the Latin-American trade, but the Shipping Board transferred the vessel temporarily to the Los Angeles company so that it could maintain its fortnightly schedule between Los Angeles and Honolulu.

* * *

The Yamashita Kisen Kaisha has established an independent service between American Pacific Coast ports and those of Mexico and South America as far as Valparaiso. The first steamer to be operated on this run is the Yoshida Maru No. 3 with a full cargo of lumber out of Portland, which will be followed by the Hokkoh Maru in December.

The Emergency Fleet Corporation cannot be taxed, according to a decision handed down by the Circuit Court of Appeals for the Ninth District at Seattle October 21, restraining and enjoining county officers from collecting real and personal property taxes on property owned by the fleet corporation.

* * *

The America-China Steamship Company of New York has sold its steamer Monmouth in Kobe and has ceased operations. The Monmouth was the only steamer owned by the company, which was organized several months ago for the purpose of entering into the trade with the Orient and Far East. Depression of Oriental shipping conditions was given as the reason for the retirement of the company from this trade and future plans of the company are not known. C. D. Harryman, vice-president of the America-China Steamship Company, after investigating immediate prospects for Oriental shipping, recommended that the steamer be sold. The Monmouth was sold to the Kishimoto Steamship Company for yen 125,000.

* * *

The Canadian Pacific Steamship Company will inaugurate a daily ferry service between Bellingham and Sidney in the spring of 1923, thus connecting the Pacific highway and the Georgian circuit of Vancouver Island. The Canadian Pacific Company will convert one of its available vessels to the requirements of this service and arrangements will be made for carrying automobiles and individual passengers and a bus line between Sidney and Victoria will be established for the accommodation of the latter.

* * *

Another vessel will be added to the fleet of the North Atlantic & Western Steamship Company, increasing the number of vessels operated by the Nawsco Line from six to seven. The Pacific Steamship Company is Pacific Coast agent for this line and reports that an eighth vessel may be added at no distant date. The steamers now composing the fleet are the Wabash, Brush, Blue Triangle, Cold Harbor, Lehigh and Artigas.

* * *

The Pacific Mail Steamship Company has made arrangements with the Transcontinental Freight Company to act as trans-Pacific agents in the Atlantic Coast and Middle Western States. The Transconti-

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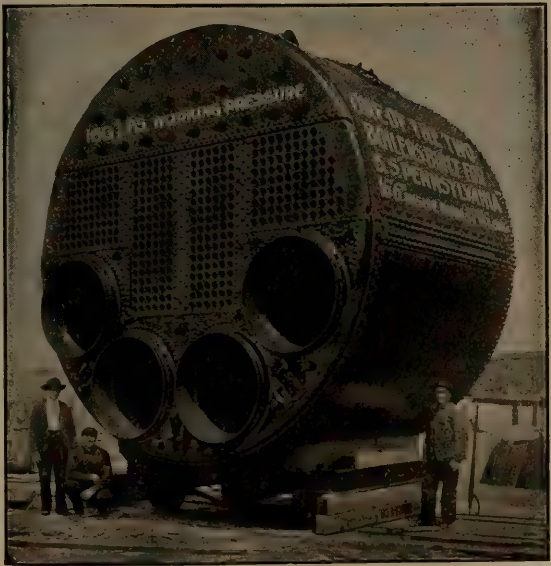

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nental Freight Company has branches in all the principal cities of the country.

* * *

The first steamer to load for the new combined passenger and freight service to be established by Swayne & Hoyt between Pacific Coast ports and the East Coast of South America will sail about the end of January. Three steamers, President Hayes, President Harrison and Susquehanna, will maintain sailings at intervals of about thirty days. The demand in South America for fresh fruits produced on the Pacific Coast has led to the introduction into this service of steamers with refrigeration space. It is planned to maintain a schedule of sailing every three weeks in each direction. The steamers will load in South American ports with seasonal fruits of that hemisphere, which on account of the reversion of seasons ought to find a ready market in this country, as well as coffee and other products in demand in this country. It is also believed that a good passenger list will be available for these steamers. Swayne & Hoyt have been operating freighters on this run for two years. The Susquehanna is the ex-German liner Rhein, while the other two vessels are of the 522 type and were formerly operated by the Pacific Mail Steamship Company in the Oriental trade.

* * *

The German motorship Principio will be put into the run between California ports and the West Coast of Mexico. She will be operated by the United Fruit Distributors, Inc., and will be the first vessel flying the German flag to return to the West Coast trade. Passenger service is contemplated and additional vessels may be placed on the run.

* * *

The Pacific Westbound Conference concluded a five-day session in San Francisco November 4, with nearly all participants signing agreement to maintain until May, 1923, standard rates agreed upon at a recent meeting in Portland. Those not signing the agreement were three Japanese lines, Suzuki & Company, Mitsui & Company, and Yamashita Kisen Kaisha, and the Canadian Government Merchant Marine. The matter of posting of $25,000 bond of good faith by all parties to the agreement was postponed until January 8, 1923, when a conference will be held in Vancouver, B. C. The following overland rates covering weight or measurement tons for Pacific Coast ports were adopted: Cigarets, $6 a ton; cotton, 25 cents a 100 pounds; sulphate of ammonia, $6; general merchandise, $9; milk, $7.50; photo material, $9; plate glass, $11.25; dye stuffs, $9; lime, $9; rubber goods, $9; cotton piece goods, $9. The California tariff on arbitrations, issued on December 3, 1921, was adopted in its entirety and affects all Pacific Coast ports.

* * *

The tanker Playa, 10,200 tons deadweight, was recently sold by the Union Oil Company of Delaware to the Associated Oil Company, which is having the ship reconditioned by the Sun Shipbuilding Company, Chester, Pennsylvania.

* * *

The California Steamship Company has awarded a contract to the Independent Wireless Electric Company for the installation of wireless apparatus on its steamers Pequot, Arcadia, Casco, Isonomia, Ida and Pawnee. These were German steamers taken over by the California Steamship Company and have recently undergone reconditioning.

* * *

The Shipping Board is making a special effort to interest American steamship companies in the purchase of the steamers West Greylock, West Faralon, West Chopaka and West Prospect, four cargo vessels of the 10,000 deadweight ton, flush-deck type, built by the Los Angeles Shipbuilding & Drydock Company. The board has stated that it will be prepared to consider offers on the four ships on a lump sum basis "as is, where is," exclusive of consumable stores, fuel and leased equipment, through private competitive negotiations on or after November 10, 1922, and that while no definite price has been placed on them, and bidders may submit offers on their own estimate of valuation, the board is holding the vessels at higher than $30 a deadweight ton. Emphasis has been placed on the fact that the ships should be unusually attractive for general cargo service on long voyages. They are equipped with reciprocating engines 3500 i. h. p., Scotch boilers, oil burners; have a maximum speed of 12 knots, and have cargo handling gear of the highest type, consisting of twenty-two 5-ton booms, one 30-ton boom and twenty-two winches.

* * *

It is reported that Robert Dollar has secured controlling interest in the Portland Lumber Company and the company is being reorganized on a sounder financial basis. This ought to result in an increased productivity of the lumber firm and will also furnish the Dollar Line with cargoes.

The General Petroleum Company have purchased from the Shipping Board two tankers of 4250 net tons, the Hamer and Hambro.

* * *

The General Steamship Company and the Associated Terminals have moved their offices from the Alaska Commercial Building to 240 Battery street, San Francisco.

* * *

The Blue Star Line has established a regular monthly schedule from Pacific Coast ports to Glasgow, Liverpool and London. The Pacific Coast - United Kingdom service of the company has five steamers on this run, the Tudorstar, Tuscanstar, Romanstar, the Magicstar and the Gothicstar. Most of these steamers have insulated space for refrigeration and are well adapted for the shipping of fruits.

* * *

The steamboats General Jacobs and General Davis have been transferred from the War Department to the Alaskan Engineering Commission and will be placed on the Yukon River connecting St. Michael and the terminus of the government's railroad in Alaska. The vessels will carry mail, light freight and passengers.

* * *

The arrival of the Munson Steamship Company's steamer Munaires on the Pacific Coast the early part of November marked the establishment of a new intercoastal service. The Munson Steamship Company of New York have appointed the Pacific Steamship Company its Pacific Coast agent and plan to operate four vessels on this run on a monthly schedule. They are the Munaires, Walter D. Munson, Mundelta and Munindies. On the Atlantic the steamers will load at Baltimore, Philadelphia and New York and will accept cargo for all regular ports on the Pacific.

* * *

Announcement was made recently of the assignment by the Shipping Board of two more steamers to the Columbia Pacific Shipping Company, the 9600-ton flushdeck steamer Wawalona and the 8800-ton well-deck steamer West Coyote. These steamers will be prepared during November and December to enter the Columbia Pacific's service between Portland and north and south China. The increased volume of shipping handled by the Columbia Pacific Shipping Company within the last few months and the prospect of a continued increase for 1923 necessitated the application for two additional vessels. This company also received three vessels last July. These were the West O'Rowa, Montague and Pawlet, the latter entering the trans-Pacific trade November 15.

* * *

Sudden & Christenson, Pacific Coast agents for Crowell & Thurlow, have announced that they will shortly inaugurate a twelve-day schedule for their intercoastal service. This will start with the addition to their fleet of two new vessels recently purchased from private interests in the east. The names of the vessels are not yet known. The ports of call on the Atlantic Coast will be Boston, New York and Baltimore, while the service on the Pacific will reach Los Angeles, San Francisco, Portland and Seattle. The steamers being operated at present by Crowell & Thurlow are the Tiger, A. L. Kent, Eagle, Wm. A. McKenney, Felix Taussig, and Thomas P. Beal.

* * *

A wireless telephone system to enable any ship in the harbor to communicate with shore is being installed by the recently organized Port Wireless Telephone Company at Kobe, with headquarters in the Shosen Building. The new company is backed by the principal shipping firms of the city and is headed by Seichiro Ogata, who has been for years one of the leading engineers of the Mitsubishi Shipyard & Engine Works. Several years ago some of the shipping firms of the city installed private systems for communication with their steamers while in port, but the slump in business caused the discontinuance of this method of communication. The newly organized company has taken over these private systems by inviting the owners to become stockholders. When a vessel reaches port, if it wishes to have this service installed, the company will send their engineers to install the telephone and will furnish trained radio operators. The telephone company uses the aerials of the ships but installs separate batteries. The work is quickly done so that by the time the ship has passed quarantine it has wireless telephone communication with the shore. The charge for the service is yen 15 per day. At present the service is limited, being only available from sunrise to sunset, but the company expects shortly to maintain it all night. They also plan to train English speaking operators. The Wireless Telephone Company hopes before long to open branches at Yokohama and other Oriental ports.

* * *

Mention was made in The Panama Canal Record of August 9 of the transit on August 1 of the steamer G. Harrison Smith with 18,500 tons of crude oil, which was a record for size of a cargo of oil. The vessel was bound from Puerto Lobos to Antofagasta.

On her return voyage the G. Harrison Smith passed through the canal on September 7, bound from Cruz Grande to New York with 19,500 tons of iron ore.

For the round voyage the vessel handled a total of 38,000 tons of cargo through the canal, which exceeds any previous loadings for a vessel for the two transits.

The record cargo, one way, is 20,000 tons. This was iron ore, carried through the canal on July 19, by the steamship Marore.

# ABOUT PEOPLE

**Frederick I. Thompson,** commissioner of the Shipping Board, has notified Chairman Lasker that his acquisition of the Birmingham Age-Herald would necessitate his resigning from the board. Mr. Thompson explained that his two Mobile papers, the Register and the News-Item, had been so organized that he had disassociated himself actively from them for a period to serve as a commissioner of the board, but that additional publishing responsibilities appeared to require his full personal and constant supervision.

Mr. Lasker conveyed to Mr. Thompson his gratification that Mr. Thompson had been so fortunately situated as to perform a double public service, through his newspapers and as a member of the Shipping Board; and while realizing that the direction of another newspaper greatly changed the situation, urged Mr. Thompson, in the same sense of high public duty that impelled him originally to serve on the Shipping Board, to withhold his resignation to the President, even at the further sacrifice entailed, until after the pending shipping bill before Congress had been determined, and features of liquidation and administration pending under Mr. Thompson's direction had been fully concluded. Mr. Thompson assented to Mr. Lasker's request.

**M. J. Wright** has been appointed district manager of the Luckenbach Steamship Company with headquarters in Seattle. Mr. Wright was connected for many years with the Pacific Steamship Company and just prior to his appointment by the Luckenbach line was assistant to A. F. Haines, vice-president of the newly organized Admiral-Oriental Line.

**G. L. West,** formerly assistant branch manager, has been promoted to the position of branch manager of the marine department of the Tyson insurance agencies at San Francisco.

A new marine agency and general brokerage company has been incorporated by **Alex. J. Chalmers** and **Major V. A. Cartwright** under the name of Chalmers & Cartwright, Inc., with headquarters in the Railway Exchange Building, Portland, Oregon.

**Thomas P. Kehoe** has been appointed manager of the marine department of Willcox, Peck & Hughes in San Francisco, succeeding G. W. Cortelyou.

**H. F. Alexander** was re-elected president of the Pacific Steamship Company at the annual meeting of the board of directors held in Seattle recently; **R. Stanley Dollar,** first vice-president; **Chester Thorne,** vice president; **E. A. Stuart,** vice-president; **A. F. Haines,** vice-president; **E. H. Hall,** treasurer; **J. H. Cooper,** secretary. Mr. Cooper will also retain his former position of assistant to the president.

**Commander H. Van Keuren,** U. S. N., has assumed the duties of construction officer at the Mare Island navy yard, succeeding Admiral John J. Beuret, U. S. N.

**Captain E. G. Froberg,** formerly port captain of the Pacific Steamship Company in the Orient, is now port captain of the company's foreign department in Seattle, succeeding **Captain Charles Hansen,** who has been placed in temporary command of the Pacific Steamship Company's trans-Pacific steamer President Jackson.

**J. B. Armstrong,** Manila agent for the Pacific Steamship Company, is in Seattle and has been temporarily appointed assistant to Vice-President A. F. Haines of the Admiral Oriental Line to fill the position formerly held by M. J. Wright.

The Pacific Coast Association of Port Authorities at the ninth annual convention held in Oakland, California, elected the following officers: **B. F. Stone** of Astoria, president; **R. D. Pinneo** of Astoria, secretary; **J. H. Burgard** of Portland, first vice-president; **A. E. Carter** of Oakland, second vice-president; **Edgar McKee** of Los Angeles, third vice-president; **John H. McCallum** of San

Francisco, fourth vice-president; **Colonel George B. Lamping** of Seattle, fifth vice-president.

The appointment of **L. L. Bates** general freight agent and **Dean J. Hanscom** general passenger agent completed the organization of the Admiral Oriental Line, which has entered into the service between Puget Sound and China, Japan and the Philippines. Mr. Bates was formerly foreign freight agent of the Pacific Steamship Company, having been connected with that department since shortly after it was established. Prior to that he was connected with W. C. Dawson & Company. Mr. Hanscom has spent several years in the Orient for the Pacific Steamship Company and was formerly connected with the Blue Funnel Line.

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Captain William Lyons, shown above on the deck of the new motorship Californian, is commodore of the American-Hawaiian Steamship Company's fleet of twenty-one vessels. Captain Lyons became first officer of the American-Hawaiian steamer Hawaiian in 1900 and has served continuously under the house flag of the company up to date. He was master of the steamers Missourian and Montana when they were sunk by submarines during the war. The Californian recently completed her maiden voyage of 21,000 miles from New York to the Pacific Coast, thence to Europe and return.

**Norris R. Sibley**, who has been in charge of the Westinghouse Electric & Manufacturing Company's marine department in New York for several years, has resigned to become New York district manager for the London Steam Turbine Company of Troy, New York. Mr. Sibley has served as assistant and chief engineer in several of the lines of the merchant marine, including the American Line, Clyde Line, Mallory Line, Southern Pacific Company, Panama Line, Luckenbach Line, Benvenue Granite Company, and Metropolitan Dredging Company. For a time he covered the marine field for the New York World, the New York Herald, and the Sun Press Bureau, and assisted in compiling "The Blue Book of Facts," a book on marine engineering. After leaving the United States Army Transport Service in 1918, Mr. Sibley became connected with the Westinghouse Electric & Manufacturing Company. He served as guarantee engineer on the steamship Westwood and the steamship Agawam, the first fabricated ship in the world. He was also the Westinghouse representative at the plant of the Submarine Boat Corporation, where he supervised the installation of propelling equipment on vessels built at those yards. He is an alumnus of the Massachusetts Nautical School, a member of the National Marine League, and various marine engineering associations. Mr. Sibley's long experience in the steam turbine field well qualifies him for his new work. His office will be in New York City.

**Captain K. A. Ahlin** will be master of the steamer Susquehanna when she is put into the new Swayne & Hoyt service between Pacific Coast ports and the Atlantic ports of South America. The Susquehanna is now in the East and Captain Ahlin will be sent to bring her back. It is probable that **Captain A. Ahman,** who has been with Swayne & Hoyt for some time, will be given command of the President Hayes.

**R. S. James** has resigned as district manager of the Luckenbach Steamship Company in Seattle to take position as general manager of the Providence, Rhode Island, terminal of the A. C. Dutton Lumber Corporation.

**Captain C. H. Heygendorff,** who has followed the sea for twenty-five years, has been appointed port pilot for Los Angeles Harbor.

**W. J. Love,** vice-president and general manager of the Emergency Fleet Corporation, will leave the head office in Washington to assume, in addition to other duties, full charge of the North Atlantic district of the Emergency Fleet Corporation and the United States Shipping Board, with offices in New York City, in place of the present district manager, A. F. Mack, who, on account of pressing personal business, has tendered his resignation. Mr. Mack went to the Emergency Fleet Corporation at the insistence of Messrs.

(Continued on page 718)

**Tycos**

INDICATING

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constantly on duty with maximum accuracy and ruggedness. *Tycos* Temperature Instruments have won the reputation, for dependability, throughout the Marine field.

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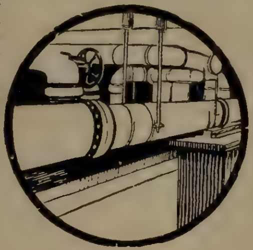

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SIGNALS FOR PILOT
IN FOG—BLOW FOUR WHISTLES
WHEN CLEAR—BURN BLUE LIGHT OR JACK AT FOREMAST

**STEWARD Life-saving Equipment**

*"Safest on the Sea"*

Mechanical Boat Davits, Oil Hose Davits, Submarine Bell Davits, Lifeboats, Boat Detaching Gears, Lifeboat Falls Controllers, Boat Chocks, Gripes, and Lashings, Life Line Throwing Guns and Equipment, water-tight and oil-tight Inner Bottom Manholes, and Mechanical Air Ports.

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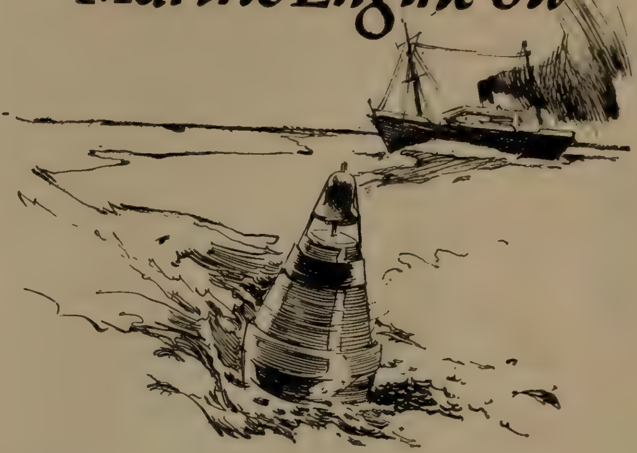
*Marine Engine Oil*



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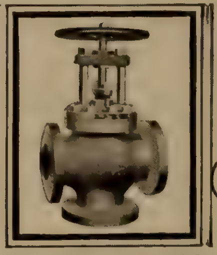

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in an Engineering works lies, not alone in the wealth of experience available in its records, but also in the spirit of its men. Most of our officials and mechanics learned their trades here. Many of them represent the second or third generation of employees. These satisfied and loyal men take pride in upholding our traditions of quality and practical design.

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# Of An Old Marine Concern

# DIESEL ENGINE

of Combustion)

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BUFFALO
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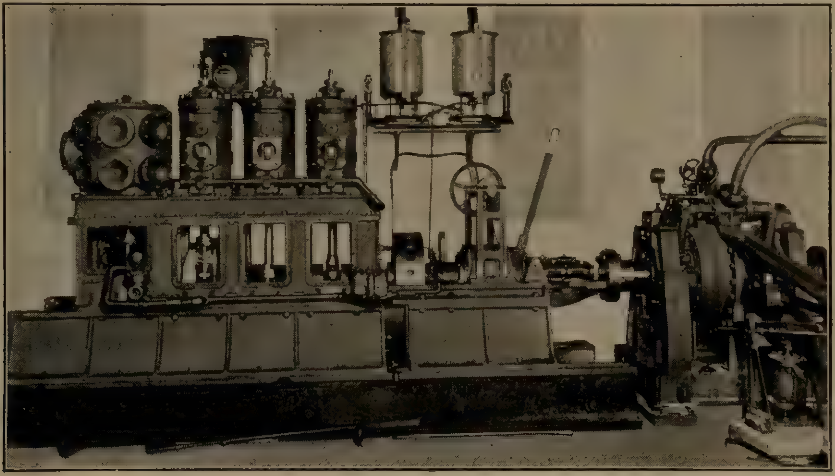

The TROUT DIESEL, 75 to 500 B. H. P.

Constant and close association with the Marine Field, has demonstrated to us, the ever increasing demand for the Oil Engine.

Our wide experience in Marine Steam Engine and Propeller manufacture, has emphasized certain essential features, which every operatorof a marine engine, has found to be important.

For several years we have been searching for the best combination of these features, to enable us to develop and place upon the market, an engine which would combine simplicity, accessibility, ruggedness and operating economy. We are confident that we can now offer such an engine,—heavy enough to withstand the hardest service, yet with no excessive weight—and no waste of space.

THE TROUT DIESEL ENGINE will uphold our reputation for building machinery, which will give uninterrupted service under the most severe conditions.

## CONSTRUCTION FEATURES

Two Stroke Cycle
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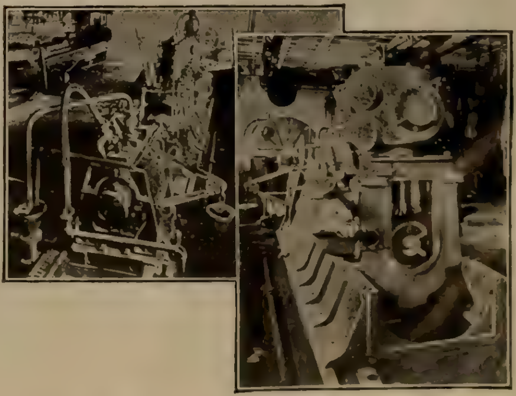

Showing Engine in Course of Construction

Smull and Love more than fourteen months ago, agreeing to serve for one year, and has been anxious to be relieved of his duties for some time. Mr. Love will continue as vice-president of the Emergency Fleet Corporation and will have general management of the New York organization, whence nearly one-third of the government's tonnage operates. In addition, he will have general charge of the supervision on behalf of the board in the operation of all of its passenger lines.

Mr. Rossbottom will remain manager of the United States Lines, but all passenger service, wherever operated, will be under Mr. Love. Mr. Love will also continue as trustee of the Emergency Fleet Corporation and will go to Washington weekly to attend the meetings of the trustees. The management of the traffic department in the Washington office will pass to W. B. Keene, Mr. Love's assistant, who has been elected a trustee of the Emergency Fleet Corporation.

**Major Paul Edwards** has been appointed port warden of Seattle to succeed Fred M. Lathe. Major Edwards was formerly adjutant general of the State of Washington and an officer of the National Guard, holding many positions of trust in the Army during the war.

**Captain John Grunbock** of Seattle has joined the operating department of the Admiral Line and will give special attention to the loading and unloading of ships of the Blue Star Line of England, represented on the Pacific Coast by the Pacific Steamship Company. Captain Grunbock was formerly connected with the Alaska Steamship Company and the Puget Sound Stevedoring Company of Seattle.

**K. Matsukuma** of the Nippon Yusen Kaisha, Tokyo, has been appointed chief clerk of the general affairs department of the company in Seattle, succeeding T. Ashimo. M. Doi succeeded T. Iijima in the export department of the company in Seattle.

**Captain Murdock D. McLennan,** well known in seafaring circles in Vancouver, along the Pacific Coast and in the leading ports of the Orient, in Vancouver, B. C., September 6.

**Captain O. C. Hawthorne,** commander of the United States Coast Guard station at West Port, in Port Townsend, September 8.

**Captain Fred E. Carter,** master of the Azalea of the Robinson Fisheries Corporation of Anacortes, at sea September 5.

* * *

## Deaths

**Captain C. L. Johnanson,** master of the motorship La Merced, on September 4 at sea en route from the Solomon Islands to Portland, Oregon.

**Captain Charles Minor Goodall,** veteran Pacific Coast mariner, at his home in Oakland, California, October 31. Captain Goodall had been in ill health for some time and had retired from active business as a member of the firm of Goodall & Perkins.

**Mrs. Lillius Gilchrist Grace,** widod of William R. Grace, founder of the house of W. R. Grace & Company, at her home at Great Neck, Long Island, October 24.

**Captain O. N. Carlson,** for many years a resident of Alaska, after an illness of several months, at the University of California Hospital, San Francisco, November 6.

**Rear Admiral Charles Edgar Clark,** in Long Beach, October 1. Admiral Clark was commander of the battleship Oregon during her remarkable dash from the Pacific to the Atlantic through the Straits of Magellan in the Spanish-American war.

**Frank Walker,** widely-known marine surveyor, in Seattle, September 29.

**Captain William K. Freeman,** formerly master of the Inter-Island steamer Mauna Kea, in Honolulu, October 1.

**Captain Francis Nelson,** at his home in Petaluma, California, November 2. Captain Nelson was a native of Denmark, 77 years old, and well known on the Pacific Coast through his connection for many years with the Pacific Coast Steamship Company.

**Mrs. C. Lacy Goodrich,** wife of the Manila agent of the Toyo Kisen Kaisha, in Manila, November.

## Japanese Lumber Imports

The amount in cubic meters and the value in yen of lumber imported at Yokohama, Osaka, Moji and Nagasaki, Japan, for the first half of 1922 were as follows:

| | Cubic meters | Value (yen) |
|---|---|---|
| **Port of Yokohama** | | |
| American | 403,714 | 14,508,018 |
| Canadian | 21,873 | 782,604 |
| Chinese | 3,453 | 98,409 |
| Yalu | 3,929 | 179,838 |
| **Port of Osaka** | | |
| American | 138,474 | 5,308,313 |
| Canadian | 657 | 33,726 |
| Chinese | 26,618 | 703,304 |
| Yalu | 8,598 | 320,432 |
| **Port of Moji** | | |
| American | 22,595 | 783,993 |
| **Port of Nagasaki** | | |
| American | 11,626 | 435,989 |
| Canadian | 2,503 | 86,094 |

### A CHANGE OF QUARTERS

The Pacific American Steamship Association, the Shipowners' Association of the Pacific Coast and the joint employment service bureau of those two bodies and of the Waterfront Employers' Union have removed their offices, heretofore in different buildings, to 336 Battery street, San Francisco, thus co-ordinating the activities of these closely related organizations. Rooms for the use of men awaiting employment have been arranged in the same building.

INSIST ON HAVING—

JEFFREY'S
WATERPROOF MARINE GLUE

In all the various grades it is the best for the money—the most serviceable. Pound for pound it will go further and do a better and more lasting job than any other make. Do not be deceived by cheap imitations; see that the trade mark is on every package.

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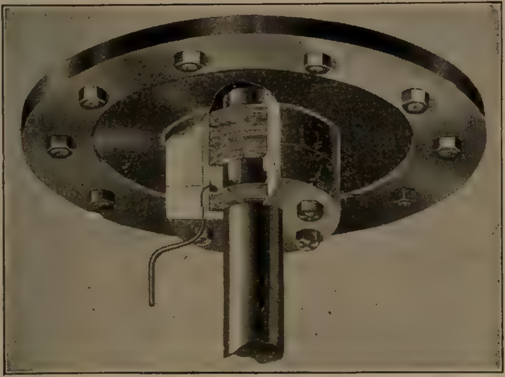

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For Piston Rods and Valve Stems of Main Engines, Dynamo Engines, Steering Engines, Refrigerating Machines, Pumps and Steam Winches

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For Government Battleships, Revenue Cutters, Coast Survey, etc. No Disconnecting to apply Packings. And every Packing is guaranteed for three years. "The HOLMES guarantee means something."

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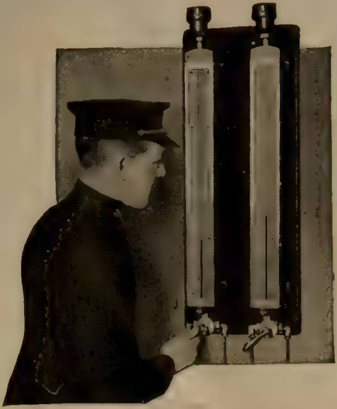

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You can measure daily or hourly consumption—the gauges maintain a perpetual inventory.

Pneumercator Gauges are accurate under all conditions. There is nothing to get out of order. And you read direct in units of depth, weight or volume.

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**Pneumercator Company, Inc.**
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P-157

# HARBOR IMPROVEMENTS

**Portland**—Budget estimates of the Port of Portland commission for 1923 has been fixed at $1,160,316.83. The items included in the new budget are $572,178.44 for the dredging department in operation, maintenance and capital expenditures, with $33,432.18 for the towage and pilotage service; $45,966.25 as the Port of Portland's half of the budget for the joint traffic bureau operated in connection with the commission of public docks; $218,739.96 for administration, sinking fund installments, and interest on bonded debt; $165,000 for special development projects that include removing a reef from the harbor below the St. Johns railroad bridge and extension of the dike at the mouth of the Willamette and at Morgan's bar, $75,000 for a pilot boat and $50,000 for a new dredge tender. The port commission has been authorized to proceed with the work of removing the bar below the St. Johns bridge and also to place contracts for construction of new pilot boat and dredge. Examination is being made of the channel between the mouth of the Willamette River and Vancouver, North Portland harbor, the Cowlitz River, Deep River and Deep River Slough to determine the advisability of recommending a survey to be made with a view to improvements as outlined in the budget. A recommendation may also be made that the United States government maintain a 25-foot channel, provided such a depth is established by the Port of Portland. The Engineer Corps, U. S. A., conducting the work of improvements in the Columbia River channel, has awarded a contract to Albert Burcham of St. Helens for the construction of a 1600-foot dike at Martin Island bar. The bid made by Albert Burcham was $22,533. Heretofore the government prosecuted the work with its own forces and this is the first unit given out under private contract. The government crew has completed a 300-foot extension to the Burke Island dike and is constructing two more dikes at that point.

**North Bend, Oregon**—It is believed that the people of North Bend are not favorably disposed towards the expenditure of $75,000 for a new municipal dock at this time, although there is necessity for a public dock, the city dock having been condemned.

**Seattle**—With the purchase of a seven-acre frontage on East Waterway for approximately $500,000, the Associated Oil Company completed the first step in the construction of a $1,000,000 oil distributing plant. The site was purchased from the Alaska Steamship Company and is located between the Standard Oil Company's plant and Albers Brothers Milling Company's plant. The Associated Oil Company will expend another half-million dollars in the erection of storage tanks and a dock to accommodate the largest ocean-going vessels. The General Petroleum Company has taken over the 2,500,000 gallon tank at Smith Cove formerly used for the storage of vegetable oil and will use it as a storage tank for fuel oil to supply United States Shipping Board vessels. A pipe line will be built from the tank to the west side of Smith Cove Pier A, where trans-Pacific steamers will berth for fuel.

**Los Angeles**—Freight congestion at Los Angeles harbor will be somewhat relieved through the operation of portable cranes that are being installed by the Smith Brothers Truck Company. Mounted on a 5½-ton truck, the crane, equipped with a 20-foot boom, will have a swing like that of a steam shovel. A new 600-foot wharf for the Standard Oil Company will be constructed in the west basin at an approximate cost of $85,300. The oil company will advance the money to the city and the city will construct the wharf, the sum being applied against rentals to be charged to the Standard Oil Company for frontage. Adequately to handle the increased volume of oil exports through this port the Union Oil Company will construct in the near future an 800-foot wharf with loading station, storage and pumping station, costing $200,000, while the Royal Dutch Shell Oil Company has also made application for a lease of 600 feet of frontage and six acres of land on Mormon Island on which to construct shipping equipment. The Associated Oil Company's new $1,000,000 plant on the west basin is nearing completion, and it is reported similar plants will be constructed for the Mexican Petroleum and Pan-American Petroleum companies.

**San Felipe, Lower California**—The port of San Felipe will again be the scene of much activity with the completion of the new road of the Southern Pacific from Mexicali to San Felipe. The new railroad will be about 130 miles long and will be built at an approximate cost of $6,500,000. This road will make San Felipe an outlet for one of the largest cotton producing sections of the United States besides the rich Palos Verde country, connecting these districts with the Gulf of California. San Felipe will also serve as a point of water contact for shipments destined over the new Southern Pacific road for the Mexican port of Guaymas and Mexico City.

**Alameda, California**—The Hogan Lumber & Mill Company have purchased old Hunters wharf and a half acre of land at the foot of Sherman street just across from their present holdings on the estuary. They will improve the property by the erection of a new bulkhead and fill.

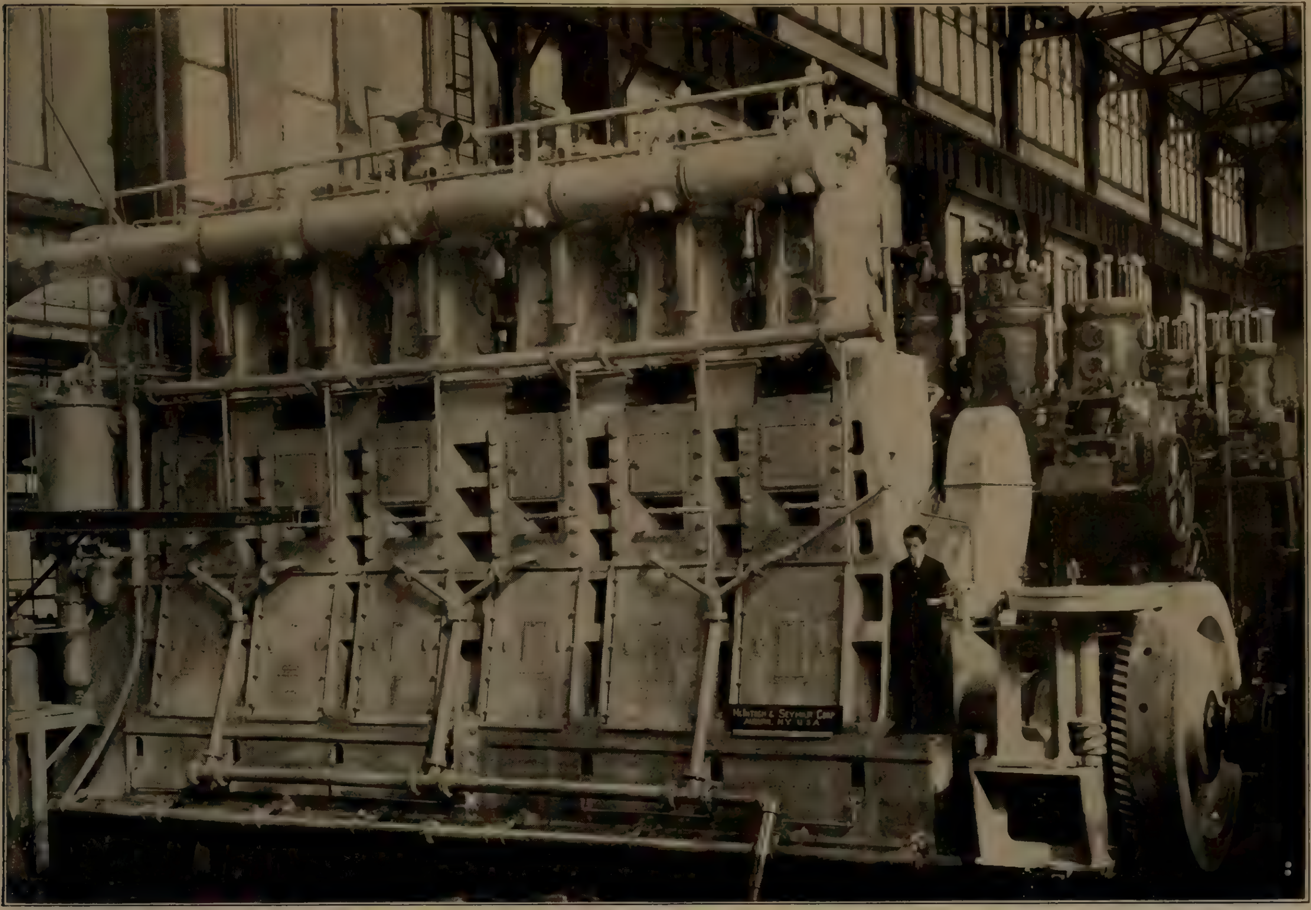
**Pittsburg, California** — The erection of a municipal wharf authorized in 1921 under a bond issue is now considered fairly certain. The city council has been notified that C. A. Hooper & Company have offered to sell the desirable waterfront property for $6500. The directors of the Pittsburg - Sacramento Auto Ferry, Inc., have also offered to lease for ten years a ferry slip which is to be built as part of the wharf.

**Mare Island**—Improvements of the dike system at Mare Island have been planned and specifications will shortly be published covering new dikes to be constructed at the navy yard. It is estimated the cost of the work will approximate $1,800,000, on which bids will be asked.

**Astoria, Oregon**—The port terminals' facilities for handling grains will be improved by the installation of electric grain handling equipment. A contract has been awarded to the Astoria Electric Company, which bid $1449 on the work. Arrangements are being perfected for the storage of needed lumber at the terminals.

**San Diego**—Appropriation of $160,000 made by the government for dredging operations in San Diego harbor will afford timely aid to the completion of port improvements. Harbor area C, in which the dredging is to be done, embraces much of the waterfront north of Pier 1, where a new pier is to be constructed. The pier project involves upwards of $800,000, with $250,000 already available and the balance to be voted at a special bond election early in the year. Some dredging will also be done south of Pier No. 1, where the Navy Department plans the construction of a wharf for the exclusive use of the fleet.

**Ahukini Harbor, Hawaii**—The harbor at the foot of Ahukini wharf will be dredged by the Hawaiian Dredging Company. The Ahukini Terminal & Railway Company has issued the contract for the work.



The above picture shows one of our 1200 I. H. P. Directly Reversible Marine Engines on the test floor. A pair of these engines have been installed on the M/S "KENNECOTT."

**Other sizes available for Marine work, 390, 640, 1550, 2000 and 3000 I. H. P. all four cycle and directly reversible.**

**DIESEL TYPE MARINE ENGINES**

**HEAVY DUTY**

**McINTOSH & SEYMOUR CORPORATION**

AUBURN, NEW YORK

149 BROADWAY
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412 BISBEE BLDG.
JACKSONVILLE, FLA.

815 SHELDON BLDG.
SAN FRANCISCO, CAL.

# Hog Island to be Sold

THE Shipping Board has decided to sell Hog Island and will call for sealed bids to be opened January 30, 1923, according to an announcement made by Sidney Henry, director of sales, Emergency Fleet Corporation. Notice is given in advance on account of the great value of the property and the desire of the Shipping Board to give every opportunity to those that may be interested in its purchase to make the necessary financial arrangements.

"It has been evident for a long time that this property would not again be called on for shipbuilding purposes, but that its real value lay in its commercial development as a terminal and manufacturing site," said Mr. Henry. "The board has disposed of the surplus materials which were stored at this location and is now prepared to offer the real estate and improvements for sale.

"It is probably unnecessary to describe this property, which is as widely known as any industrial site in the country due to its contribution during the war to America's quota of shipping. It may be that during the years since the close of the war the recollections of this property have become somewhat less clear and a few of its principal characteristics may be recalled. The yard is located on the deep water on the Delaware River, a short distance below the mouth of the Schuylkill and less than seven miles from the City Hall of Philadelphia. It contains in the neighborhood of 950 acres of land and in connection with the shipbuilding program this land has been graded, the water front dredged, roads constructed from end to end, an elaborate trackage system installed, and the waterfront, which extends for about two miles, is already equipped with piers necessary for its use as a terminal, having seven piers 1000 feet in length and 100 feet in width equipped with cranes.

"Buildings remaining on the property will be sold with it, including a large modern concrete warehouse and several permanent shop buildings of steel construction, in addition to a large number of wooden buildings, which will be of value in connection with the development of the property.

"Whoever may be the purchaser of this property or whatever may be its development, it is a matter of very great importance to the city and port of Philadelphia, for there are few, if any, sites in the vicinity of our larger ports which have the possibilities of aiding their commercial growth as has this property."

MAGNOLIA
Anti-Friction Metal

is always uniform in composition and dependable in service. It adapts itself quickly to rough or scored shafting, makes smooth highly polished contact surfaces and "sets" particles of grit where they cannot cut the journal or appreciably increase friction. Magnolia Metal melts and pours well, is easily peened and scraped in and is perfectly adapted to a very wide range of speeds and pressures. With the lowest frictional coefficient of any known bearing metal, it runs cool with less lubricant and is excellent protection against hot boxes and melting out where lubrication is neglected. Sold in ingots and cored bars, the latter to eliminate shrinkage, and pattern and casting costs on small bearings. Write for test data. (3)

MAGNOLIA METAL COMPANY
113 Bank St., New York
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MAGNOLIA ANTI-FRICTION METAL
TRADE MARK

# Reduce Cost of Thermit Welds

AS a result of an investigation by the research department of the Metal & Thermit Corporation, New York, to reduce the cost of thermit welding, it has been found that economies amounting to 10 per cent or over can be made in regard to the amount of thermit required to make a weld.

It has been found that by reducing the size of the collars or re-inforcements of thermit steel, also by narrowing the gap and changing considerably the proportions of gates and risers, it is possible to weld the smaller sections, such as 2 inches by 3 inches up to 4 inches by 6 inches, with very much less thermit than was ever believed possible before. For instance, a weld on a 2-inch by 3-inch section, for which 40 pounds of railroad thermit used to be recommended, now can be made with only 10 pounds of thermit. On a 3-inch by 4-inch section, where 55 pounds was formerly recommended, only 25 pounds is needed, provided the size of collar, width of gap and size of the various gates are proportioned in accordance with the dimensions now found best.

On a 4-inch by 6-inch section, the new method will give a perfect weld with a saving of over 10 per cent in the thermit required, i. e., while 75 pounds was previously recommended for this size of frame, the new method will weld it with only 65 pounds, or a saving of 13-1/3 per cent.

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## STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912.

Of Pacific Marine Review, published monthly at San Francisco, California, for October 1st, 1922.

State of California,
County of San Francisco, ss.

Before me, a notary public, in and for the State and county aforesaid, personally appeared B. N. De Rochie, who, having been duly sworn according to law, deposes and says that he is the business manager of the Pacific Marine Review and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management ,and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are:

Publisher—J. S. Hines, 9 Scenic Way, San Francisco.
Editor—A. J. Dickie, 1036 Mariposa Ave., Berkeley.
Managing Editor—Andrew Farrell, 1512 Sonoma Ave., Berkeley.
Business Manager—B. N. De Rochie, 943 Fresno Ave., Berkeley.

2. That the owner is: (If the publication is owned by an individual his name and address, or if owned by more than one individual the name and address of each, should be given below; if the publication is owned by a corporation the name of the corporation and the names and addresses of the stockholders owning or holding one per cent or more of the total amount of stock should be given.)

J S. Hines, 9 Scenic Way, San Francisco.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of the total amount of bonds, mortgagees, or other securities: (If there are none, so state.)

None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

B. N. DE ROCHIE,
(Signature of Business Manager)

Sworn to and subscribed before me this 30th day of September, 1922.

(Seal) E. M. CLARK.
(My Commission expires April 22, 1922.)

Form 3526.- Ed. 1922.